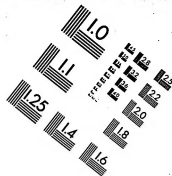
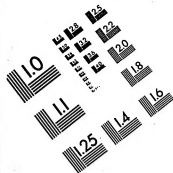




Association for
Information and Image
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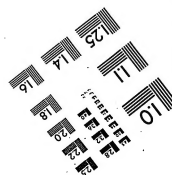
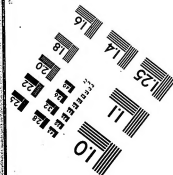
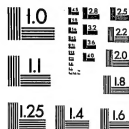
MS303-1980



Centimeter



Inches



Thomas A Edison Papers

A SELECTIVE MICROFILM EDITION

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THOMAS A. EDISON PAPERS
A SELECTIVE MICROFILM EDITION
PART II
(1879-1886)

REEL 43

NOTEBOOK SERIES (NBK-21)

Fort Myers Notebooks (#4 - #7)

Lamp Factory Notebooks

Pocket Notebooks (Mott Journals)

Fort Myers Notebook, N-86-04-03.3

This notebook covers the period April 1886. The entries are by Edison and Mina Miller Edison. Many of the notes and drawings concern fundamental experiments on magnetic fields and lines of force, including those of the sun, earth, and other planets in the solar system. There is also some material relating to the conversion of heat directly into electricity. Other notes and drawings deal with the coating of carbon filaments, armature design, carbons for arc lights, electric railway motors, telephones, phonographs, quadruplex and phonoplex telegraphs, balloon telegraphs, marine telegraphs, a battery for the grasshopper telegraph, a cotton picker, a larynxial piano, a hearing aid, a device for indicating the depth of steamboats, the testing of metals, the expansion of steam engines, spectroscopy, artificial silk, and the separation of cream. Many of the entries are duplicated in Fort Myers Notebook N-86-04-03.1. The first page contains the notation: "Fort Myers Fla April 3 1886 Ideas T A Edison." The book contains 280 numbered pages.

Blank pages not filmed: 244-245, 248-249.

N-86-04-03

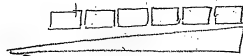
Foot Myers Fla
April 3 1886

Ideas

T. A. Edison

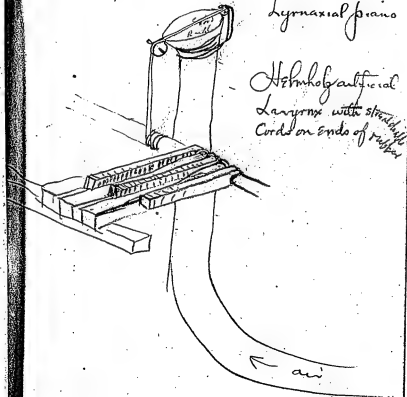


April 3 1886 TAE



Laryngeal piano

Helmholtz artificial
Larynx with stretched
Cords on ends of rubber



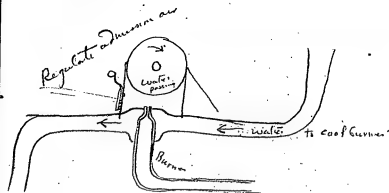
April 3rd 1886 TAE

In the gelatinous silica for compound
Carbons mix minimum quantity Caustic
Potash to cause it slightly to fuse at
highest temperatures to hold silica
together —

Lampblack — Drop on hot plate (red hot to
ignite it) Crude petroleum + revolving
cylinder —

With Natural gas. Dont use outside
Oxygen but mix previous to issuance
from burner with the gas — ascertain
by experiment smallest quantity
Oxygen that will take all the
Hydrogen of the gas & leave no excess

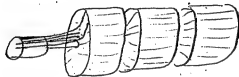
April 3 1886 TAE



or mix air previous with gas -

April 4 1886 TAE -

I propose to rotate the cotton picker spindles by a blast of air acting on a wheel like ~~blower~~ ^{blower} - The direction being reversible as the spindle goes up or down towards the plant.



Multiple armatures, each armature wound complete in regular way.

Commutator 1st block to wire to first armature 2nd block to " " 2nd armature
+ so on

April 4 1886 - TAE

On the filament of carbon coated with silica etc, The thickened ends can be freed from the coating by immersing in an acid - Hydrofluoric, Sulphuric etc but this need not be originally coated if each one done by hand separately.

The increase in the number of candles per horse power with white radiating surface will be greatly increased

Make a $\frac{1}{10}$ MF Condenser (paraffin) in form Cylinders also are exactly same Capacity or near test both outside then Enclose one in Vacuum - see if Vacuum increases Capacity or sharpness -

April 5 1886 TAE

Carbonize less dense material
such as paper, wood (pine willow, etc.)
Licorice mixed with MgO by auto
Preliminary to get high resistance
then if it stands well - Compound
the surface by MgO -

I think with perfect Carbon the lighter
material will answer fully as
well as bamboo & be exceedingly
high resistance Try parboiled
paper - White Holly Lampblack
& Licorice + MgO - Lampblack Tar
& MgO - Licorice + MgO . punch out
afroiled sheets of this material
Municipal 32^s will answer

April 5 1886 Tal

Mixtures for filaments which are soft can probably be rolled down between tin foil several layers of material & foil one over the other & rolled together thus obtained even

Several might be stamped out simultaneously bent in loop shape & Carbyd together. The foil melting or could be eat out by acid. Thus making it easier to make fine filaments.

April 5 1886 Tak

With Auto Preliminary Soak
 Original filaments with Licorice,
 Prelimi + Carbz reg - Then Soak
 Licorice + prelimi + resoak 2 or 3
 times, then Carbz regular.
 This has never been fairly tried.

April 6 1886 TAE

Arc Light Carbons - Before baking
make sheets of pottery mixture
roll outside covering on Carbon -
make mixture so as to contract will be
same as Carbon - put it on very thin
perhaps 2 or 3 exceedingly thin $\frac{1}{1000}$
Coats best - Alumina - MgO
clays -

Grashopper Battery - Make the size
of the cells as small as possible so as to
prevent slow discharge by large surface.
Indiscrete points on vibrator so no fine
joints to follow up & prevent instantaneous
discharge

April 6 1886 709

Lamp -

Make a mouse with like Sir Wm's
or perhaps that gas lighter which I have
in Lab run by motor with answer.

Try Counter Static Expts.

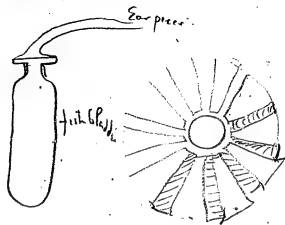
Speaking tube System

Try greatest distance with inch
gas pipe diaphragm on ends & 35-lbs
pressure spr inch in tube. - try lead
pipe $\frac{1}{4}$ inch dia - also glass tubes
 $\frac{1}{4}$ dia inside - These will pblly
Carry farther on each smoothness
but then ends to end & pour sealing wax
to make joint - Carry pressure high
as possible on gas or lead pipe Expt

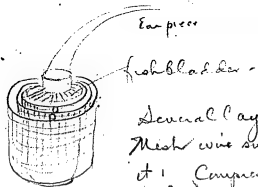
II
dia



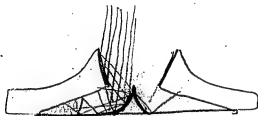
April 1886 JAE
Draf.



April 6 1886 TAKE

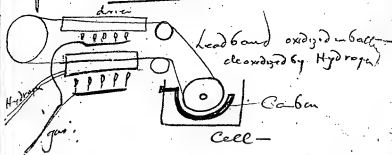


Several layers of 30
Mesh wire surrounding
it. Compressed air
in bladder.



Telephons

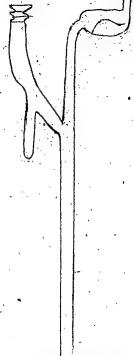
April 1886 at



Conversion of heat into E by oxidation
+ reduction of O of lead on continuously
moving band of lead passing into liquid
close to carbon in proper liquid
Lead is oxidized then thru dry tube
thence through Hydrogen reduction
tube to battery again so on
continuously.

April 7-1886 Mina
Tar

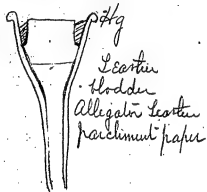
29



Experiments to get a
porous material whose
pores will let O through
and not H.

April 7, 1886 Mina Tat³¹

Use plaster paris - dry clay
 Cork - Lime - natural - moulded side
 Muschlin - pressed phosphates,
 Chalk every degree of pressure. etc.
 Coconut Charcoal -
 Def charcoal -



Electrify the
 surface of the
 porous material



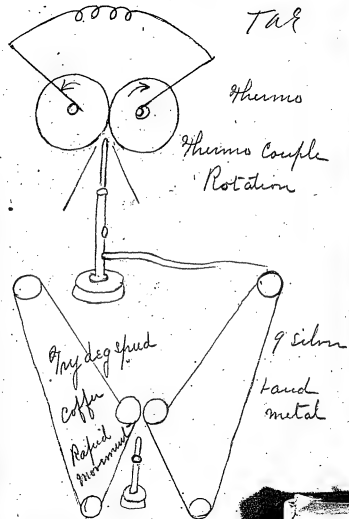
April 7, 1886, Mina

Tar 33



Electrify
parchment paper
Learner, etc.

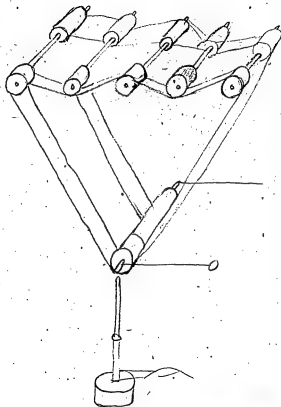
April 8, 1886, Mina.



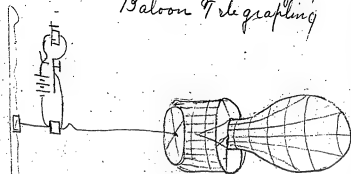
April 7-1886, Mina.

Thermo

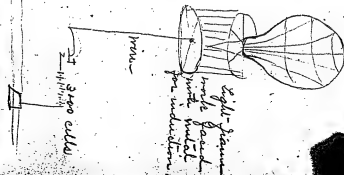
Tae



April 7 - 1886 Mina TCE 39
 Air Telegraph
 Balloon Telegraphing



ca. 100 ft.



April 8 1886 Tai

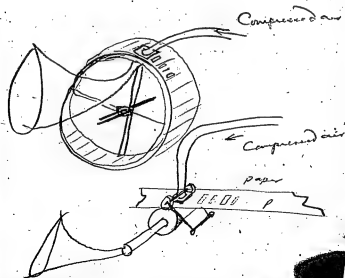
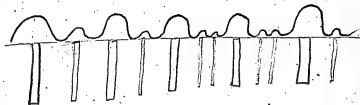
For separating O from air - draw into a vacuum through immense surface of iron or other metal perhaps those metals which have an affinity for O. greatly.

Experiments on loops of all metals in Vacuo for Poynt in Silliman Journal -

Cooling molten metals various kinds in Vacuo - also with current (strong) passing through metal while liquid in Vacuo - also within powerful magnetic field - ditto with current at various angles

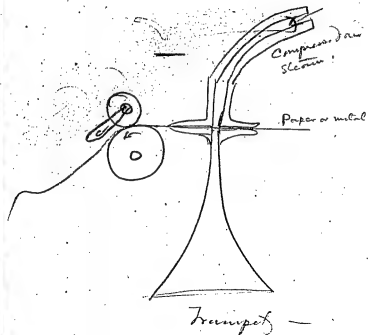
April 8 1886 TAE

Siren Photograph



April 8 1886 TAE

Siren Phonograph

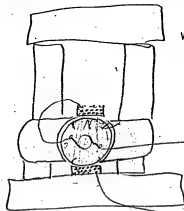


April 8 1886 TAR

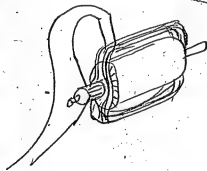
Inducting directly in phonograph
 by direct impact of the sound
 wave. I think it will reproduce
 from same device by expansion
 of air in turning in reg. phon
 use as Camped



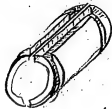
April 11 1886 TAE



Wind as shown heavy
wire so amperes spires
same as on armature.
then put it in main
Circuit.

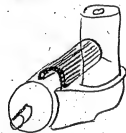
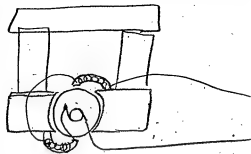


April 11 1886 Tals



Brought to hold
extra coil

April 11 1886 Tag



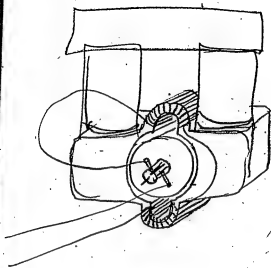
Extra prolongation
to shift lines force
to keep neutral
point constant.

April 11 1886 -

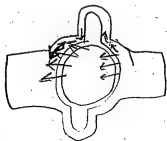
Good

Wind armature thus, one turn around, then before going to Commutator, start end on another turn round but at right angles & after this turn is made go to Commutator & so on winding whole armature in this way, $\frac{1}{2}$ of the wire is available but the other $\frac{1}{2}$ prevents the armature itself from sending out lines of force the field is increased & the lines concentrated so we get about same volts as in regular way if not more,



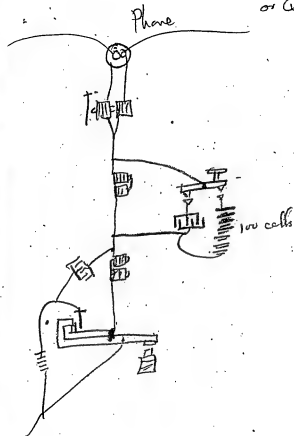
April 11 1886 Tae

good



April 11 1886 VA

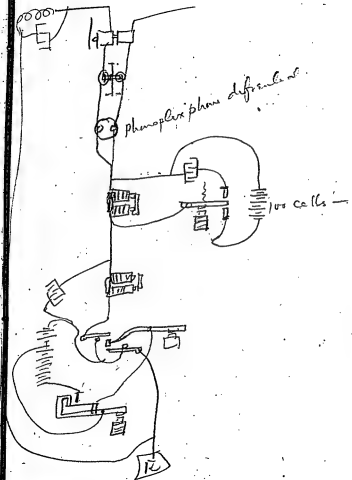
Phonoduplex
or Quad

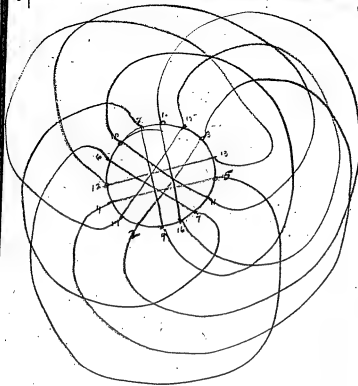


April 11 1886 TAE.

61

Sextuplex by phonoplex

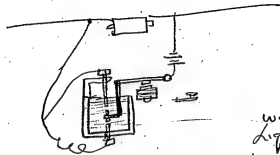




OK

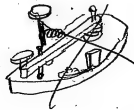
April 11 1886 1889

Phonoplex



water & oil
liquids -

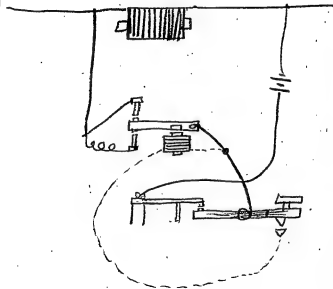
To get rid of the Condenser



April 11 1886

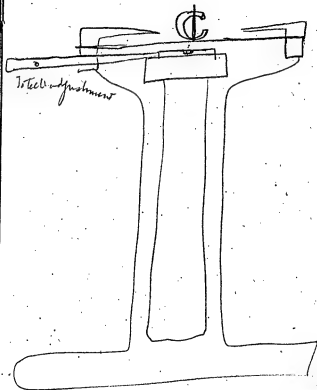
Tae

Phonoplex = to prevent battery running
down

*Good*

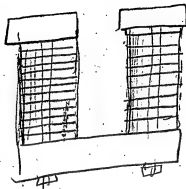
April 11 1886 TAE

Phonoplex

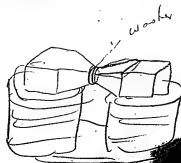


April 11 1886 TAE

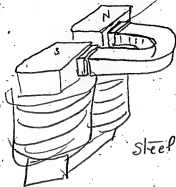
Permanent Magnets



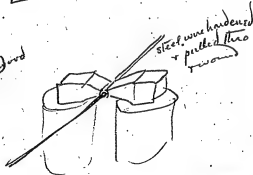
steel washers



April 11 1886 TAE

Perm Magnetssteel plates as
heads to soft iron
shoe

steel plates glass hard

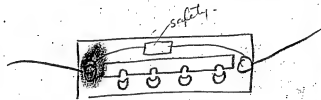


April 11 1886

TAE

Condenser Safety Catch

Dont forget about
making Zinc of
batter of
Compressed.
an amalgam of
Zinc -

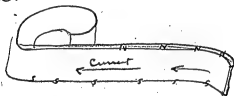


sheet of thinnest paper tissue
unparaffined - High volts
will jump + short ckt cond

April 11 1886 TAE

Telephone Receiver -

a current passing through an
~~steel~~ wire makes $\frac{1}{2}$ of one side
 N other S. same in band



Hardened
 & straight

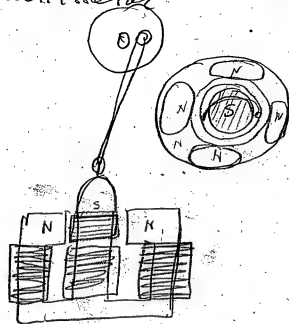
Hence



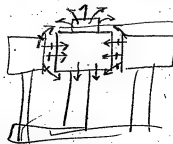
paper between
 the coils -



April 11 1886 TAG



Reciprocating Dynamo
neutral joint



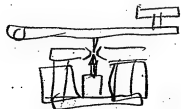
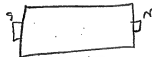
April 11 1886 Quick discharge -

Phenoplex 7 ohm
overhanging coil -



overhanging coil. see if better

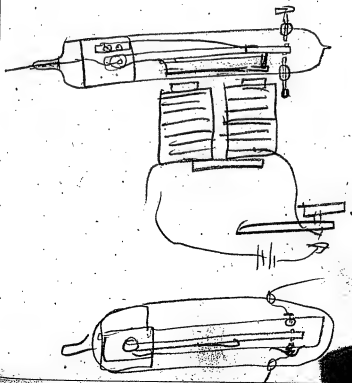
7 ohm Coil with
steel wire core magnet



April 11, 1886 -
J. A. E.

Phonoplex quick break

Break ckt in Vacuo





April 11 1886 TAE

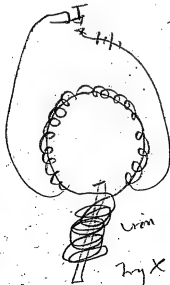
X42

PS

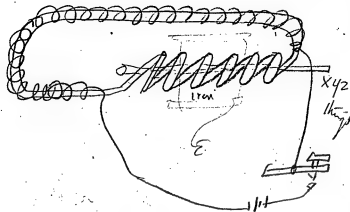
Try closed iron
magnet & then on
phone.



Continuous ring
no magnetic lines
outside yet big
induction see if when
the current comes
of (10) the wire poles
There cant a moment
magnetism on closing &
opening, immediately
this ring big
thoroughly

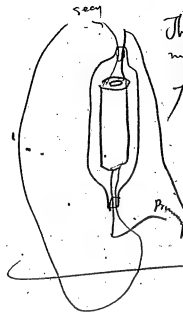


Try X42 things in this

April 11 1886 Var

also see if E reconnected,

April 11 1886 TAE



This is in other book
make this 200 ohm
secondary & 7 ohm primary
7 ohm phone coil
in vacuum high
sec if changed
qkr -

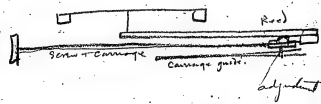
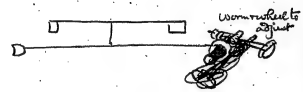
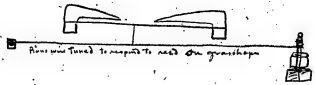
grasshopper Call



strong steel bar

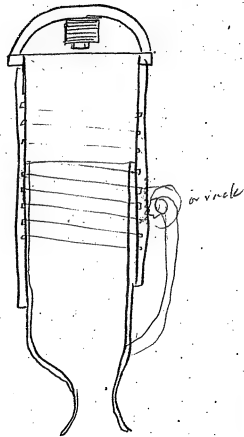
spring tuning forks

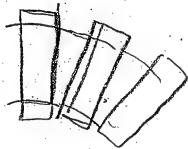
April 12 1886 TAE



April 12 1886 TAE.

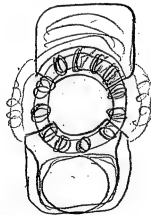
Grasshopper - Receiver with adjustable Chamber
so that Column air can be adjusted periodic
with the vibration of the reed —



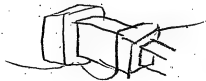


April 12 1886 -

I think Gouck showed build a
cheap grammo which will use
the air cooling method of winding
like that shown in head light dynamos

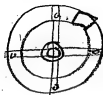


Wound either
with 4000 turns
or right angle
winding on
armature



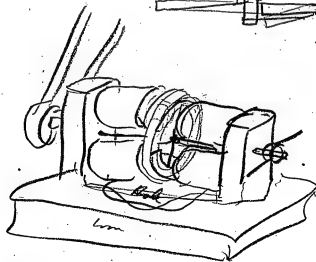
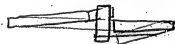
April 12 1886

New cheap Gramme non spkg dynamo



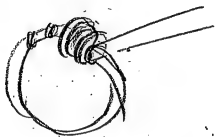
10/1000 sheet iron
rings built up
with tissue paper

The rings are split and can be sprung
enough to get coils on



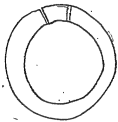
April 12 1886 -

It's doubtful is splitting the
ring to get Coils on is as good
as a winding machine



Split bobbin run by belt slowly
& fast - fast to fill it & slow
to unwind on from core -

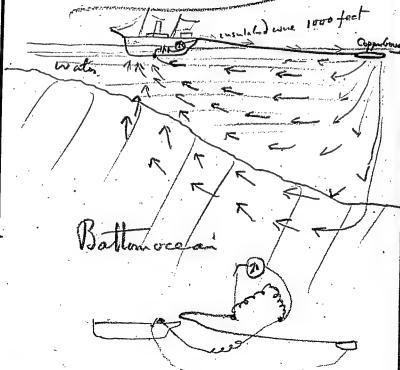
Have 9
patents split sides
of all put together
at one common
opening then after
Cord put in
shift them
from one corner



April 13 1886.

JAE

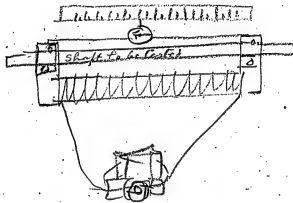
Device for automatically indicating
depth water on steamers continuously
also an alarm by gal needle swinging
to a stop & closing ball of
ocean str



The device is put in one side of
wheatstone Bridge

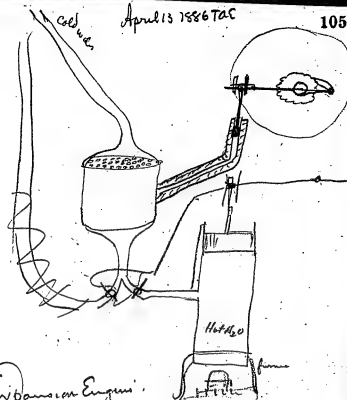
April 13 1886 T.A.E.

Testing quality & homogeneity &
for flaws of steel iron shafts.



Compass used on a Torsion slide along
near shaft. if shaft homogeneous
the zero point will be constant. if a
flaw there will be a consequent
pole & produce a dip in the curve
there are many variations possible
here -

April 13 1886 TAC

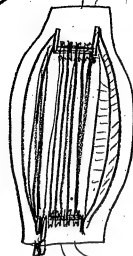


Expansion Engine

principle Hydraulic pump

big cylinder full copper tubes very
thin or $\frac{1}{16}$ in. $\frac{3}{16}$ bore cylinder 115-inch
dia. of iron copper heavy copper ends -
2 feet long - Hot water 212 let up
in then run back into hot boiler
& cold let thro & so on all
auto = B₁ Sul Carbon or others &
good expansion liquid to
be used

April 13 1886
fal



Hot & cold H_2O
passed alternately
through the
multiple pulley
Engine

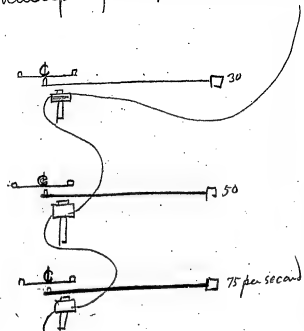
and
Expansion Engine



April 13 1886 Tal

On pharoplix try 2 7 ohm
 Coils in Series with 8 cells
 instead of 4 so same
 ampere pass through both
 as one - see if this dont do
 better if not make one
 sounder with 4 points so
 they will leave & close
 exactly & use separate
 battery & separate Condenser
 around the sparking points.
 perhaps the 2 coils in series
 requiring 8 cells causes
 such high EMF at points
 that to get rid of spark too
 much Condensers must be used &
 then take it from the line
 but with one sounder separate points

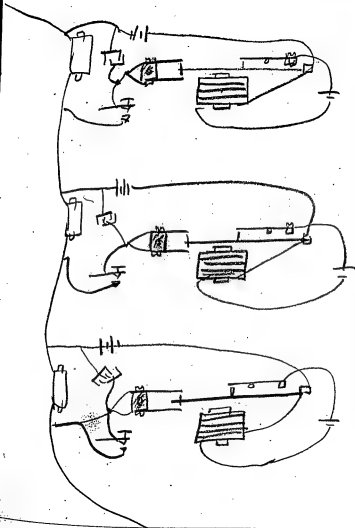
April 13 1886 TAE -
Multiple phenoplex



Very low notes
lower than this if
possible —

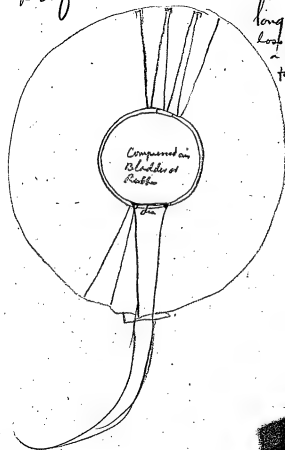
Other page for Sander

April 13 1886
multiple phonograph



April 14. 1886 TAE

Draft —



long funnel no
loop - you get
a bigger chamber
for respiration

Compressed air
Bladder of
Rubber

See

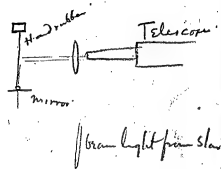
April 13 1886 TAE -

Try dissolving Licorice in heated
Boiled Linseed oil - then coat
tin foil with thin layer dry ~~is~~
naturally, then recoat till get
it 10/1000. Then put in hot oven
& keep 48 hours -

also try linseed films.
Compound (C) many films in one
& use hot oven. The reason
previous experiments with films
didn't work well was that they
were only naturally dried
while they should be dried by
hot oven slowly raising heat.

also try tissue paper uncollender
& collender no holes dip &
dry naturally & then bake
slowly with high fuel on one

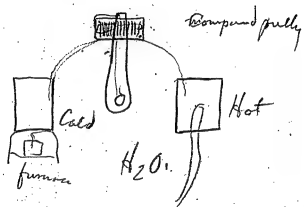
April 14 1886 Tar.



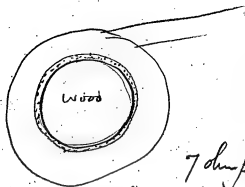
25 foot scale -

April 14. 1886 T. A. S.

Drops are then the then



April 14 1886 Tae



7 dm phanoplas
 grown when laid length
 on 2 inch block boards

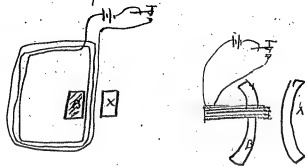


same quantity
 iron wire on it
 req with
 Cop wire
 wound

Length 3 in

April 15 1886 TAE

Try some fundamental experiments on lines of force. The present theory don't seem to explain certain Expts.



B + X don't see if X magnetized - fss
if its proportional -

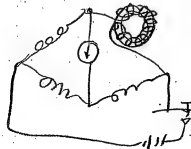
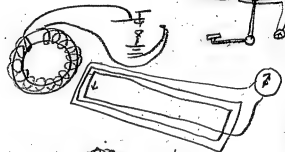
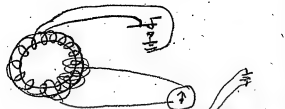


X don't see if magnty
fss the proportion
between it and
when in Center.

also move it by $\frac{1}{2}$ outwardly
as the arrow measure
relative strength

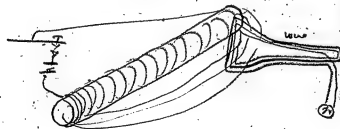
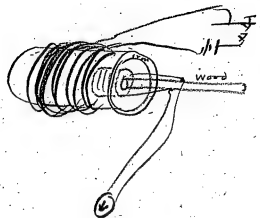
April 15 1886

Fundamental magnetic Experiments

draw to & from
what around

April 15 1886 TAE

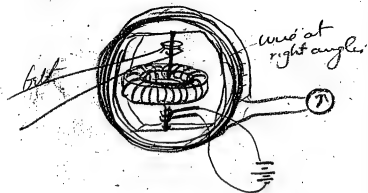
Fundamental Magnetic Expts.



move in every direction
+ plot the strengths of
induction

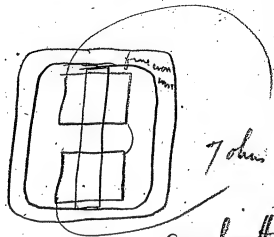
April 15 1886 TAE

Fundamental Magnetic Experiments



April 15 1886 TAE

Phenoflex Coil



Johns

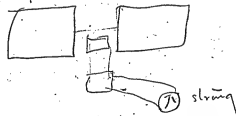
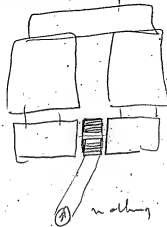
Same length as
regular



This is length than
line force & more
inward

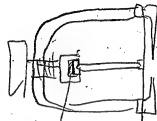
April 15 1886 TAE

Fundamental Magnetic Experiments



April 15 1886 TAE

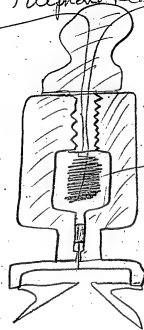
Telephone Receiver



dif substances, pressed chalk line
 & every other salt dry & also
 moist EMG action,

April 15 1886 TAE

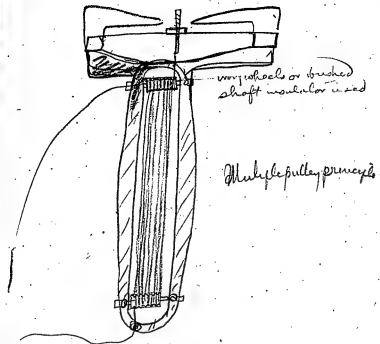
Telephone Receiver



100 oh
Liquid greatest
expansion

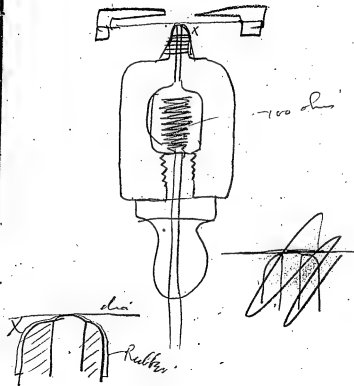
Hydraulic principle

April 15 1886 Tar.



April 15 1886 TAE

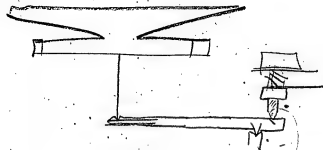
Telephone Receiver



April 15 1886

Tae

Telephon Receiver



all that is necessary is
leverage in the class
of receivers —

The Thermo
Receiver
Selenium etc.

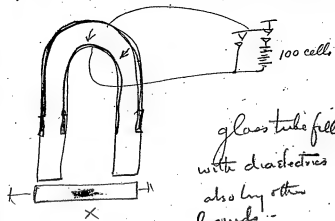
April 15 1886 Tae

XYZ

If the molecules of an element like a metal is effected when a line of magnetic force strikes one side of the wire, giving a Current in one direction & when merely allowing the line of force to strike the other side a reverse Current, Then it is very likely that Compounds (not elements) should be effected different. hence dynamo mac wound with Hard rubber - tubes containing liquids instead of wire & moulded solids in wires or rods like peroxide etc —

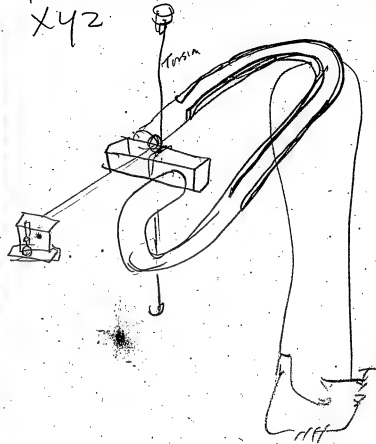
April 15 1886 -

XYZ



Cutting with E lines of force at right angles ought to produce another form energy along the compound & thus produce an attraction. X is trough containing same liquid or others - also all solids & metals, try dif ends & as some may be now corners of XYZ - try metals a better device next page.

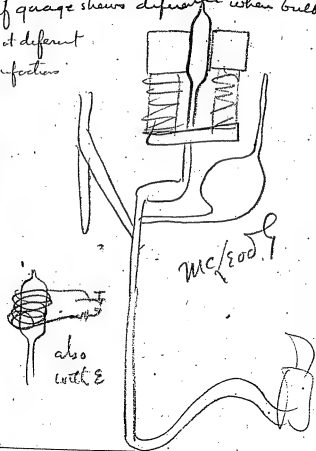
April 15 1886 TAE
X42



April 15 - 1886

Fundamental Mergle Expt

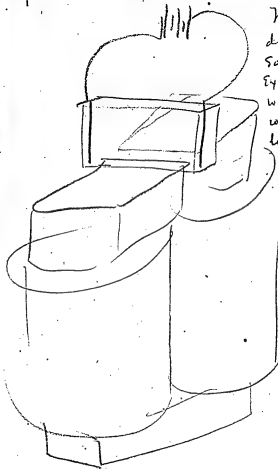
ascertain when a fair vac is obtained
 if gauge shows difference when bulb magnet
 is at different
 positions



mc/rod

also
with E

April 16 1883



Trough containing
different conducting
solution -

Experiment is to see if
with dilute soln
whether the magnetic
lines will not

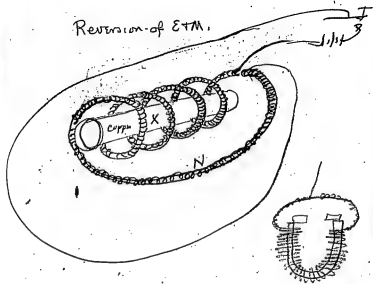
cause the attraction
of the electric
lines &
with it the
conducting matter
concentrating.

The liquid means
may be leaving
only pure water
in top of cell

April 16 1886 - TAE

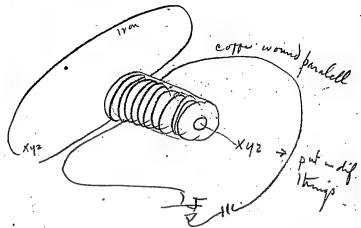
XYZ -

Revision of ETM.



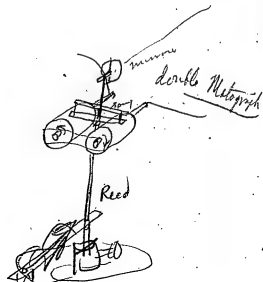
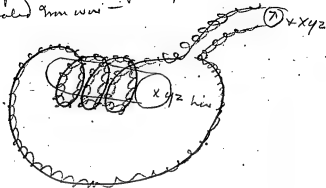
a Copper horseshoe wound
 with several layers of softest iron
 wire $\frac{1}{8}$ thick over the whole length
 of which is wound insulated wire
 & charged powerfully with battery.
 Export for XYZ but Copper poles

April 16 1886 T. A. E.



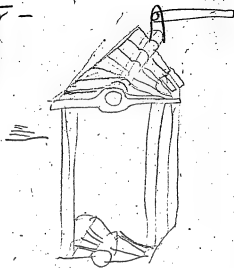
April 18, 1932
X42

Copper wire wound spirally with
insulated 9mm wire -



April 15 1886 Tal

Tasimotor -



April 16 1886 TAE

Air Telegraph -

Barometer at Geneva being
 27.08 on top Mt Blanc
 15732 feet above sea was
~~16.08~~ 16.08. correct Geneva
 by Sea Level. Then Experiment
 on long Vacuum tube for
 conducting vibrations from 7 ohm
 phonoplex coil to telephone
 at different pressures use
 regular Hg Gauge as McLeod
 not required -

$$\begin{array}{r}
 27. \\
 \underline{12} \\
 5.4 \\
 \underline{27} \\
 8 \overline{) 32.4} \\
 \underline{40} - \\
 44 \\
 \underline{76} 0 -
 \end{array}$$

140

$$\begin{array}{r}
 125. \\
 \underline{70} \\
 875 - 0
 \end{array}$$

April 16 1886 TAE —

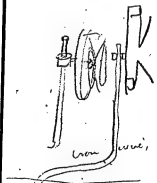
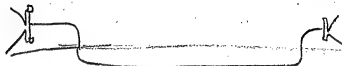
On Top Mt Blanc difficult
to make yourself heard
The Barom 16.08, hence

The Compressed air for Deaf
Device & in long speaking
Tubes is OK

Try Alcohol or other liquid
instead Compressed air in
fish bladder —

April 16 1886 - T O Z 169

= Important putman within + work up system
of non underground telephony - no electricity -
In water a bell is heard 45,000
feet which in air can only be heard
656 feet, Vel of sound in Water 4900 per
Sec Ann 17,500



iron was suspended by
strings in a box
in the Earth only
transmit the sound

Molecularly not move
The whole wire and so
just bury in the Earth
see how far can
transmit -

Try diff forms of hammer & receiver

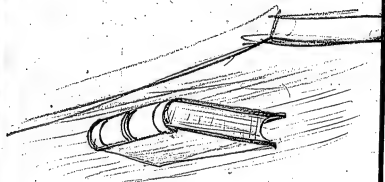
April 15 1886 - T.C.E.

Bronze Non-E Telephone

Perhaps the buried wire was covered
 by wrapped with loose cotton
 lead lengthwise, + slightly
 braided over to hold it in its
 place - This would prevent
 transmission of vibrations to
 outside matter,

Experiment to find a non-conductor of
 sound from an wire wire to
 matter around it -

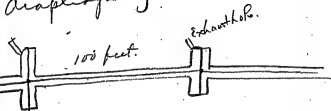
glass tubes or even lead tubes
 with fine piano wire in 200
 feet lengths covered have a vacuum
 in it hermetically + the joint be made
 an elastic one so vibration
 would be carried for miles



April 16 1886 TAE -

Iron wire Non-E Telgham

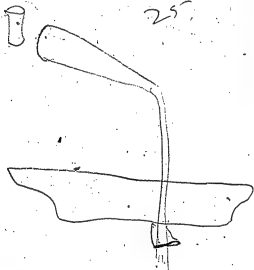
The lead pipe or glass pipe or even
Copper with fine wire could have a
diaphragm joint



6

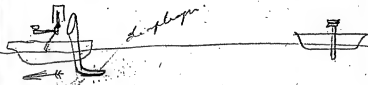
75,

25,

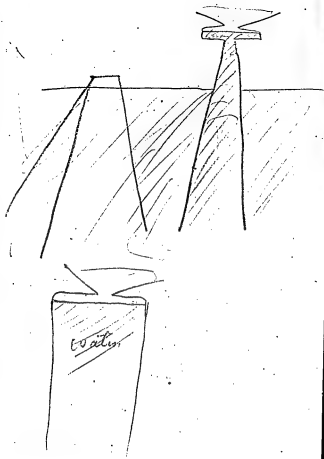


April 16 - 1886 TAE -

Telegraphing at sea



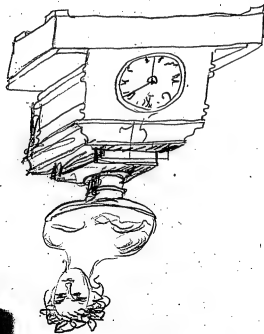
as sound will travel 50 times further
in water than air - I propose to
run from a steam whistle are large
funnel & tube to water under the
steamer the End is provided with
a diaphragm, or not as Experiment will
determine - by cutting whistle into
breaks we have dots & dashes which
are composed of vibrations, these
are communicated to the water.
on another ship a tube runs up from
the bottom of vessel with water in

April 16 1886 ~~1886~~ TAE

177

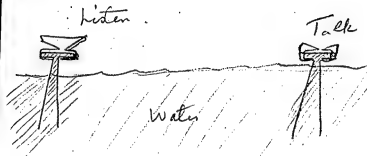
Morse Telegraph

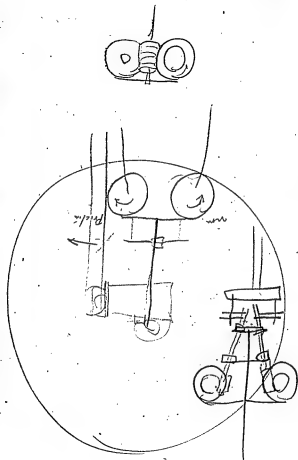
or a diaphanous is on the end and a thread passes up to another diaphanous to receive the impulses. Thus, each vessel being provided with sending and receiving apparatus communication can be had a distance probably of 25 miles, a siren, or heavy vibrating fork may be arranged to give vibrations to the water,



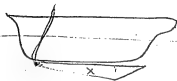
April 16 1886 TAE

Experiment in water telephone transmission





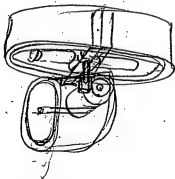
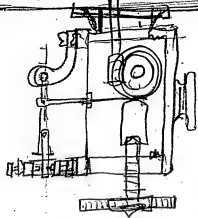
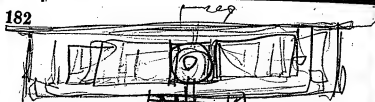
April 16 1886

Mannie Telgh

x funnel 50 feet long closed
on end but full water. (closed by
pardonment etc.)

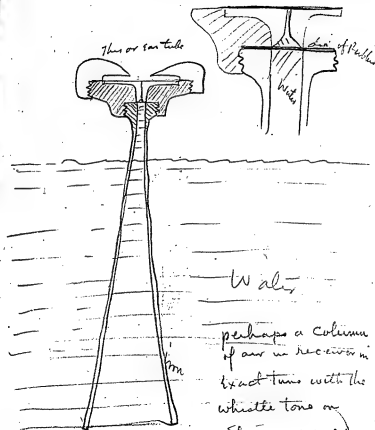


also diagram in side of a ship
deep down + long funnel inside
ship to Concordia hole 2 foot
diameter in area covered 2 months holes + diagram



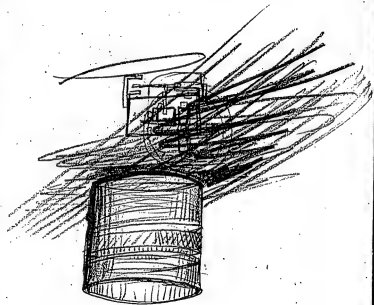
April 16 1886

Water Telephone Receiver



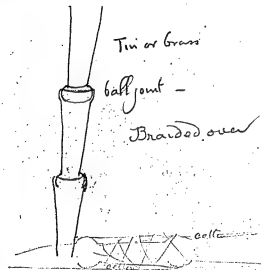
Water

perhaps a column
of air in receiver in
exact tune with the
whistle tone on
Steamer would
help



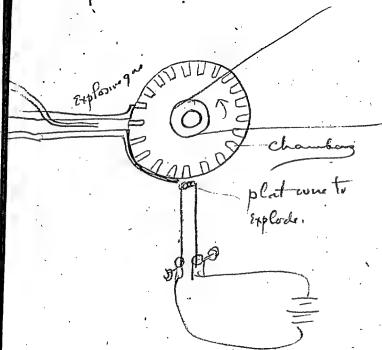
April 16 1886 TAE

Flexible Ear tubes of metal



April 15 1886

Explosive Siren

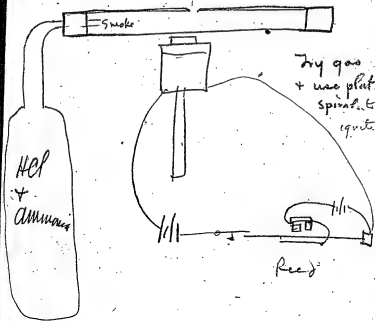


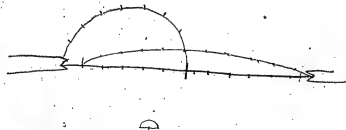
April 16 1886
TAE

Small one for
projection -

Listen

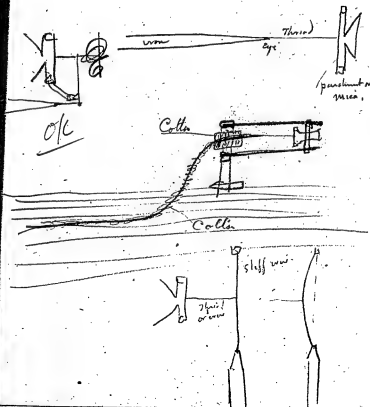
See if sound most
powerful indirect
line -
Smoke rings



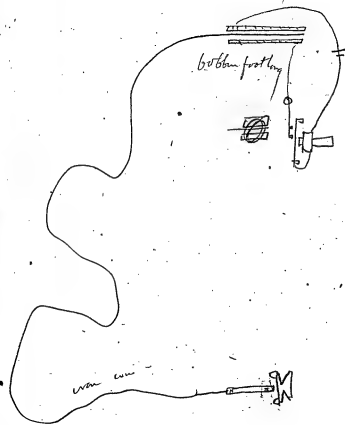


April 16 1886 Taz

Molecular Receiver from iron wire
import telephone Non-E.

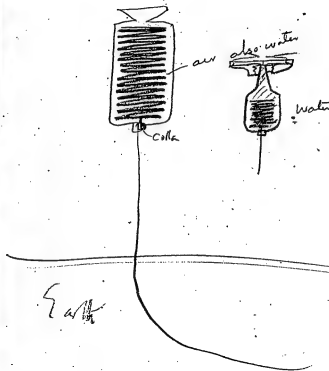


April 16 1886 Tal



April 16 1886 TAE

Molecular Recor



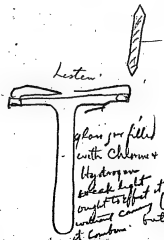
April 16 1886
TAE

True photophone



solution used for negative
developed by light.

beam focused
Each flash produces
a change in
vibration to X



This under pressure
Control with Collar
+ silver salt - also
Bichromate of Potash
Effect Light to produce
Change which
must either increase
or decrease tension
on surface of beam
transmitted to Carbon
button + telephone at each flash
it Carbon

April 16 1886. —

Mfr of Silk ^{my} Gum Chicle 199

glue mixed with Bichromate of Iron
proper proportion made in cylinder &
placed in larger body of Hydrocarbon
solids - soften & pull out.

afterwards dissolved in Carbon - Exp. can
find filament of gelatin to height.

Bases - Collodion - Cupric Ammonium
paper - gutta serena - Balata -

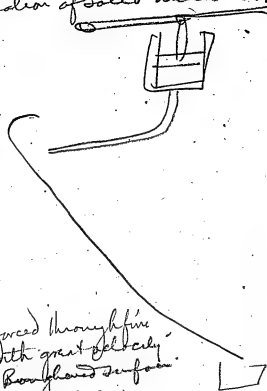
Rubber dissolved in Benzol or
Bisulphide of Carbon into which Rosin or
various other Hydrocarbons dissolved
until ~~Red~~ Reductant forms Rubber.
has slight elasticity - Exterior
can be glue - Licorice - Molasses
Candy & fibres natural continuous

length be made by working over &
over the Candy with Rubber Rosin
core & then dissolving in hot water

McQueen says strong
glue of acetic acid. exchanges glue
to rosy mass drawn out silky threads
the active surface with Bichromate

April 16 1886 Tue

Separation of solid matter in Milk



Milk forced through fine
hole with great velocity
upon roughened surface.
The bricks, globules &
unbreakable ones pass
down incline quickly

April 16 1886 JAE

Separation Cream from Milk

Try Graham's Dialysis - use
also Electricity thro porous
diaphans.

Use porous diaphans various
~~thicknesses~~ isubstances -
use Vacuum underneath

use air pressure on one receptacle
to free pores of globules & next
receptacle use Vacuum to draw
water of milk through -

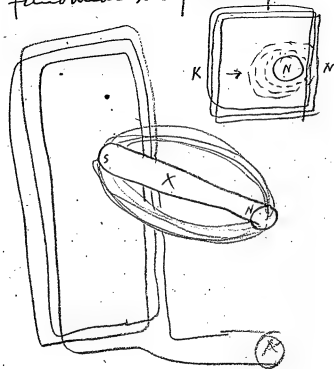
Evaporate in Vacuum -

Freeze the H_2O -

Try filling "through long tube"
filled with fine particles. use
Vacuum to draw - Centrifugal
through porous substance

April 16 1886 TAE

Fundamental Magnetic Expt



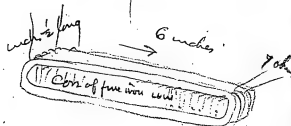
X Steel Mag-moves to from N
towards R but not enough so K
will come within range of lines of force
want to ascertain if its the drawing in toward
may not of balance of forces or not.

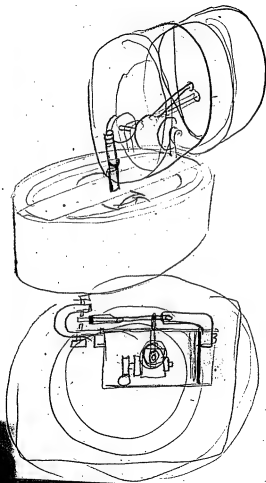
April 16. 1886 TAE.

Phonoplex Coil, sheet wound
as shown



use fine copper with
paraffined tissues between
wind it 2 inch thick
Core being $\frac{3}{4}$ " - fine iron wire.

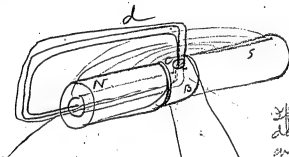




April 16 1886 Sat

Fundamental Phys Expt

Fundays -

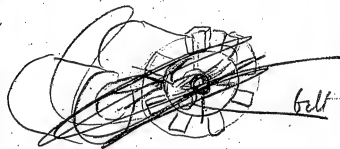


If the iron
dust acts as
guard-brush
with thick
brush of copper
mounted in
everything through
which wire
passes
also not
insulated



Revalued -

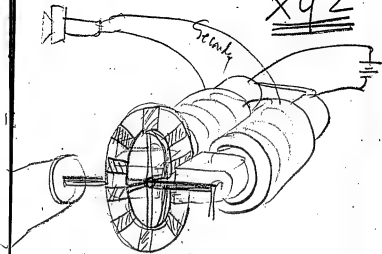
see if B is good
guard -



April 16 1886 TAE

Fundamental Magnetic Experiment

XYZ



a powerful permanent magnet
would be better or The primary
only in one side of a bridge & at p
in balance wire The wheel is
rotated with great velocity. +
at different spots has a piece of substance
or cell with liquid to see if there is any
that will retard magnetism See 215

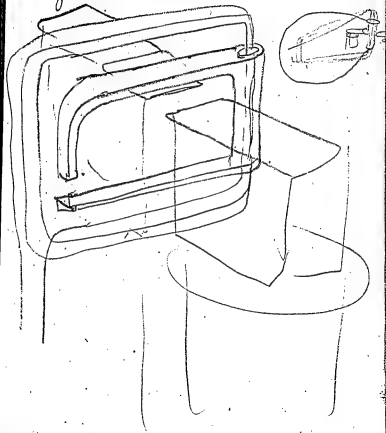
April 16 226 (Columbus)

XYZ

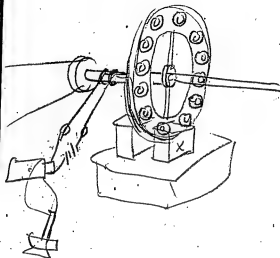
If any substance will disturb
the lines of force and the wheel is
turned sufficient fast to give
a musical note it will be
heard in telephone, now if this
disturbance is created without
the production of electricity or
magnetism, then we have
a new form of energy

April 16 1886 TAE

Fundamental Experiment
pull thro with & with heavy Copper
guard closed -



April
XYZ



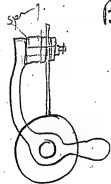
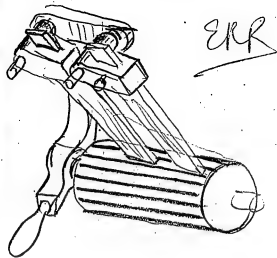
Electric pen spools no mag
X liquids & substances
to see if the electric field is
disturbed,

April 16 1886 Tag

Milk -

Try desalting out butter oil
with Bisulphide ^{Calc} Etc - then Evap B₅

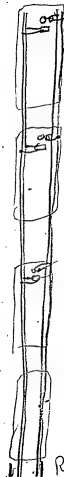
April 16 1886. TAE



Brush device
for Motors that
reverse direction
of rotation

April 17 1886.

Electr

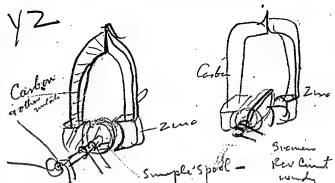


Work up idea
of accelerating
bottom to work a
Centrifugal clutch
Running in reverse

Reversing & Camitchy 1886

April 17 1886
Tae

XYZ



wind used on hand roller
rather substance



The patches between
Z & C become
changed & ought
to give something

Cylinders $\frac{1}{2}$ Zinc
 $\frac{1}{2}$ Carbon or Copper
Wires wound perpendic-
ular to straight angles.

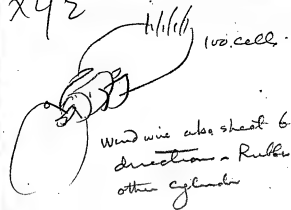
April 17 1886 TAE
X42

If Electricity passing in a wire
is given off as heat, Then a
wire under some kind of polar
environment give off electricity
when the same is conducted
along it from high to low
temperatures

Applying of heat to a wire &
allowing it to conduct
to form a magnetic
field ought to give electricity

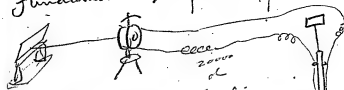
April 17 1886

X42

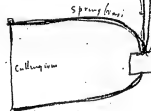
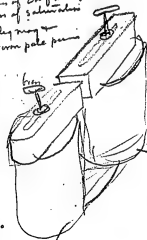


April 17 1886 TAE

Fundamental Magnetic Expt



Determine sensitivity relative E.H.F. with the poles
at different positions in the plot curve — 39-inch pole
also substitute magnets with exactly same
poles but diff length make curve — also
curve of E.H.F. at diff dist from apart with diff
degrees of saturation
also try mag in
Cast iron pole piece



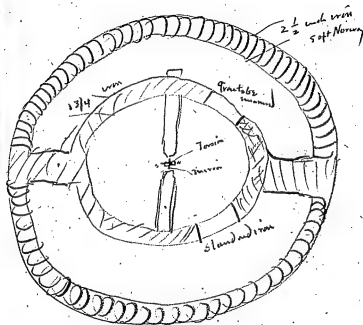
Try pole pieces
diff kinds & shapes
also to ends etc.



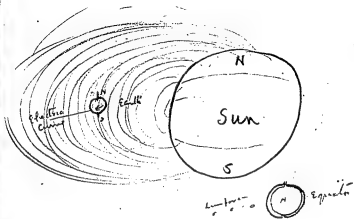
Ampere meter

April 17 1886 TAE

Fundamental Magtc Expt
Magnetic bridge



April 17 1886 TOL



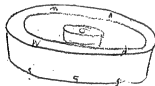
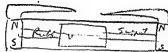
The Earth revolving around the sun
 Cut the lines of force so the current
 tends to pass around both sides of
 it. This would neutralize & give no
 effect were it not that one side
 of the Earth is heated & this gives
 direction to the current around
 the Equatorial Belt. This
 makes the magnetic poles

April 7

and The electric Current & Consequent
magnetism causes the attraction
to the sun the Orbit of the Earth
is the point where the tendency
to go off in a straight line is
balanced exactly by the Mutual
attraction of the electric Current
& magnet of the Earth & magnet of
the sun.

April 17 1886
 Telephone

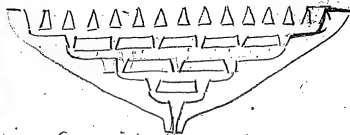
Quick discharge



$$\begin{array}{r} 14 \\ 14 \\ \hline 56 \\ 14 \\ \hline 196 \end{array}$$

$$\begin{array}{r} 36 \\ 11 \\ \hline 200 \end{array}$$

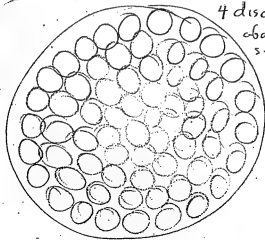
April 1886
Drab.

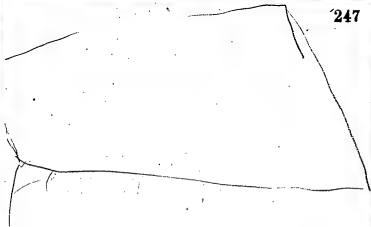
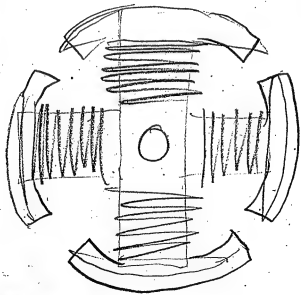
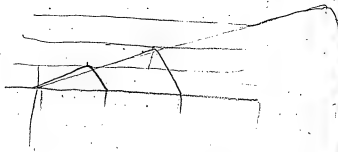


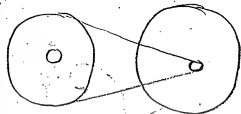
Ear pecci

Coned holes

4 discs first
about 100 cones
second 10 cones
3rd —







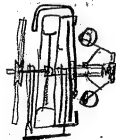
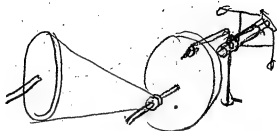
5 inch = 15-

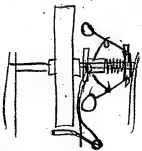
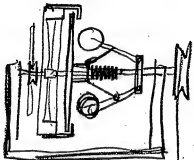
1 inch equals 3 inches

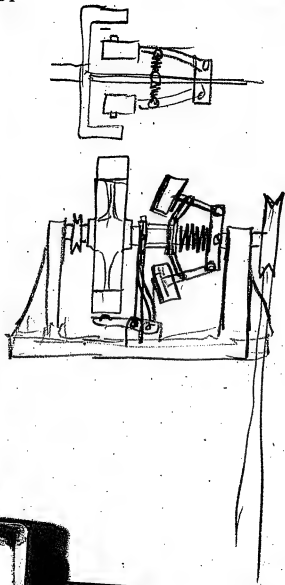
5 to one - 6 inches

1 Rev per second. 18 inches
 $\frac{18}{90}$

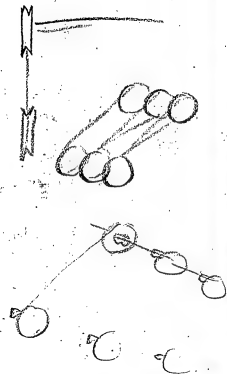
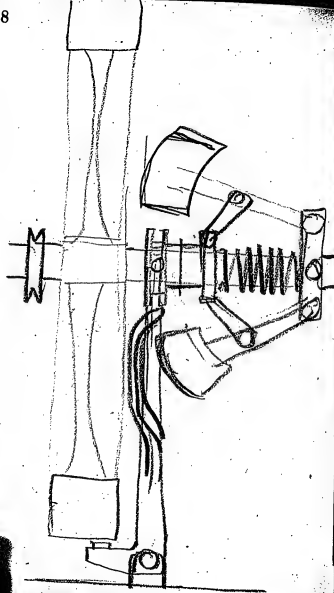
$2\frac{1}{2}$
 $7\frac{1}{2} \times 90$

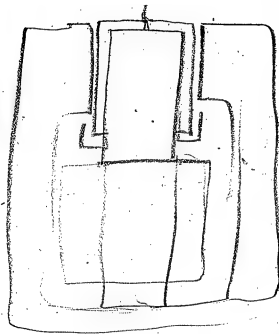
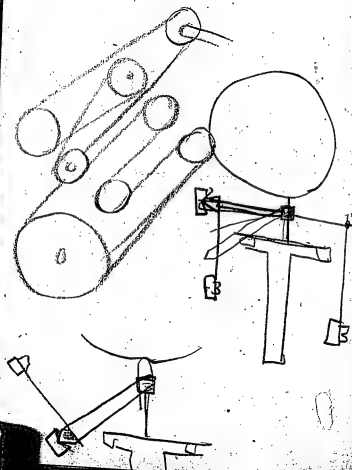


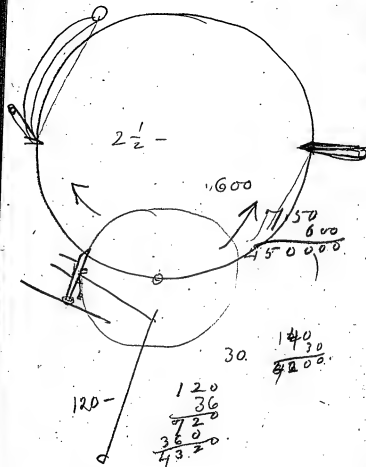


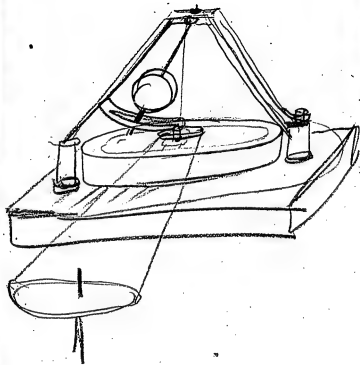


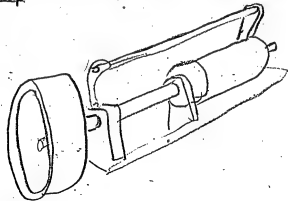
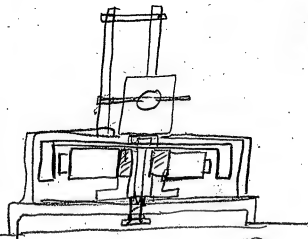


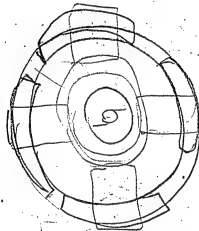
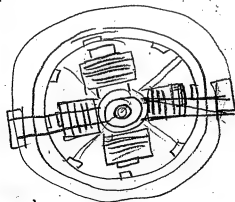
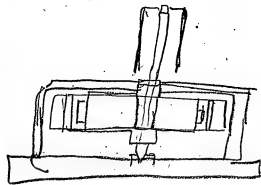


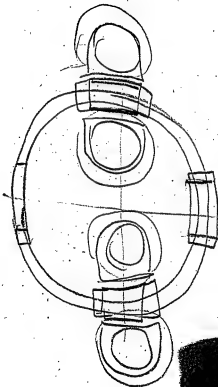
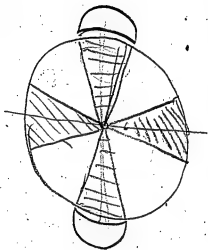


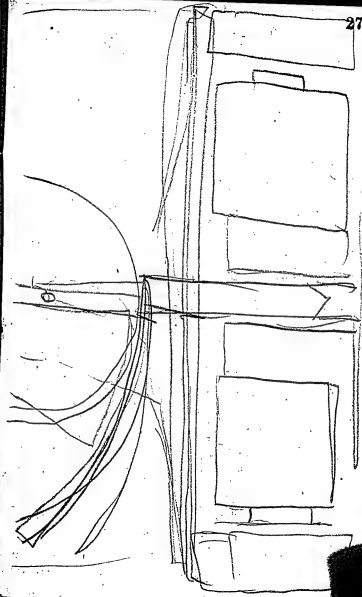
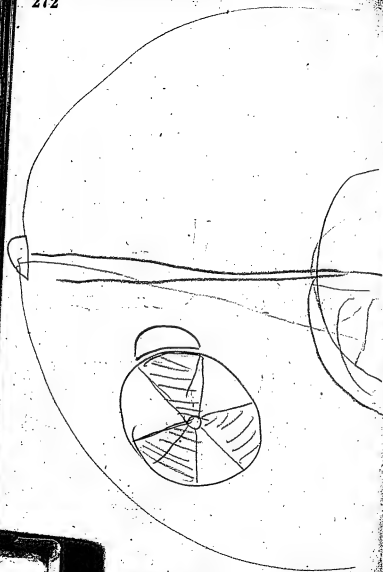






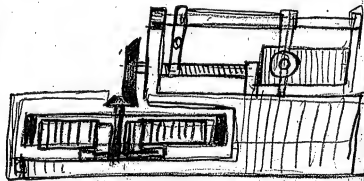




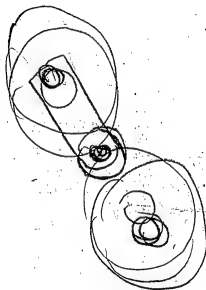


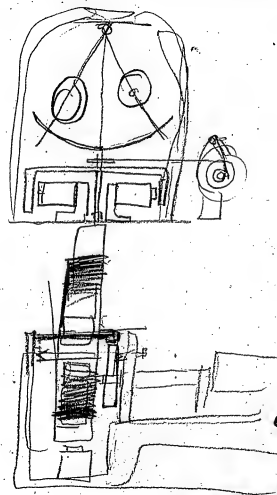
Handwritten vertical text in a rectangular box, possibly a list or index. The text is written in a cursive or shorthand style. The characters are difficult to decipher but appear to be a series of letters and symbols arranged vertically. The box is drawn with a double line border.

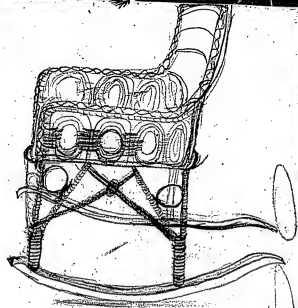
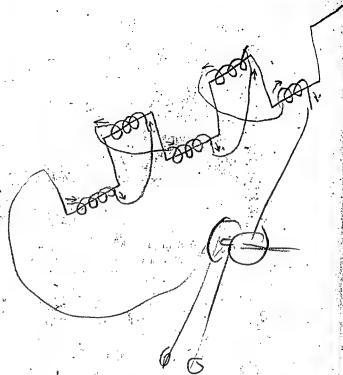
Photograph



Phonograph







Fort Myers Notebook, N-86-04-05

This notebook dates from April 1886 and contains notes by Edison to Eli Thompson, who was in charge of preparing the Fort Myers home. All of the notes relate to plantings for the grounds. Included also is a drawing of the layout of the house and grounds. The front cover is labeled "T. A. Edison Memo. Book." The book contains 284 numbered pages.

Blank pages not filmed: 2-3, 46-47, 54-57, 60-284.

N-(86-04-05)

Found 11/15/66 in wire cage
in Vault 8.



5
Mr Thompson - It will require 280
lighter loads of muck to cover 8
acres 4 inches deep - Each lighter
load 30,000 lbs, or 8,000 cart loads. 1000 lbs
each - or about 15,000 5-ton loads on Ward's wheel.
We shall want a Banana Bed about
20 feet square. You can probably
buy these, I noticed up by the wind
mill on the island up in the narrow
channel of the Calakousehatchie,
lots of bananas bushes;

Shall want about 1000 pineapples,
I believe there are two ways of
planting; one of which is longer but
sure, sure, plant ~~the~~ ^{this} kind -
in garden across road
order them of Montgomery
fruit & large -

~~Set out towards woods two ponciana~~
~~Trees~~ It might be best in cases
 like this to set out duplicates very
close together at the end of a
 year if both should grow the
 poorest one can be cut down. This
 will insure having at least one.

I think we should have a lemon
 hedge inside fence towards woods.
 The lemons ~~procured~~ ^{here} seem
 to be a poor variety. if ~~you~~ ^{we} cannot
 procure the regular ~~Malayan~~ ^{Malayan} lemon
 shoots ~~elsewhere~~ ^{Regist} of course the slips
 yourself from seeds found in
 the lemon we have north then
 you will have to use the lemon
 + lime (The lime seems to be good)

procurable here.

I saw near Jacksonville some very fine Pecan trees, please see if you can propagate slips from the nuts procurable from the stores, also, - propagate also soft shell almonds Brazil nuts, Date palm from Dates procurable in stores, English Walnut, Filberts, -

Procure some fig tree slips, and set out about $\frac{1}{2}$ dozen - put them out towards the old house as they are an ugly tree, I don't know if there are any fig trees around here if not perhaps you will have

to get them from Jacksonville
where there is a nursery - Major Evans
will tell you about the nursery there
and what you can get there,

As peaches grow in perfection down
here, ascertain what period of the
year when the season is not
backward that the peaches ripen
if they ripen as early as April
25 - or May 1st set them out,
perhaps there is an early variety
 $\frac{1}{2}$ dozen trees will answer;

What time do grapes ripen here
if during our stay which will be
hereafter from January 15 - to
May 1st - set some out

We want a strawberry patch.
 about 20 by 100. of best early
 bearing Strawberries - also
 about 25 Current ^{garden} bushes, also
 a bed of Red and Black Raspberries
 mixed. I think ~~a~~ a bed about

20 X 100 will do for Goth,

4- Caplin Beans

5- Olives,

5- Jamaica apple

5- Egg Fruit.

About 10 mangos

" 10 alligator pears, House ^{Shrimp}

10 Sapindillos

2 Spanish gooseberry,

Fraser had one tree last year

4 paw paw trees
 Landscape -

- 6 pomegranates,
- 2 mulberry native,
- 2 custard apple,

I think ^{as many} ~~10~~ orange trees of best
 variety ^{as will go on end of house plot well as in} will do us on the grounds
 as I propose to plant some
 across the road - plant a lot
 in garden in case we want to transplant

$\frac{1}{2}$ doz Guavas if they
 bear during our season if not
 one will do -

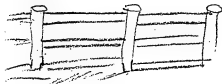
I think you better plant some
 peanuts so as to obtain about
 3 bushels for our use -
 garden

I wonder if plum pear +
Siberian Crab will grow here
if so put out Couple of each
Handscope

I will send you from New York
on my arrival several good
books on floriculture & horticulture
etc, also as soon as possible
ship you a full ~~catalogue~~ of
assortment of seeds and
bulbs. I think about 1800
varieties — also will send
you a supply of good garden
truck seeds. The later you

Can plant at such time as
will insure us a good &
regular supply for the
table during our stay -

I propose to have 4 acres
cleared across the road and
a board fence put around it
thus,



The garden truck & propagating
beds can be placed over here;
you should set out plenty of
extra slips over there so in
case of a failure on the River
side lot of a shoot you
can transplant.

I suppose Cotton seed will
sprout & grow in this part
of the Country any time
if so plant so we can see
some while here say 10 or

15 hills -

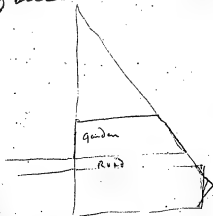
I think perhaps the streamling
bed might go across the
road -

You better use some of the
space across road to
experiment with a different
fertilizers -

You are authorized to have
about 4 acres cleared
which I understand is

Man who has charge of
the place next to old house
will do for \$35 per acre

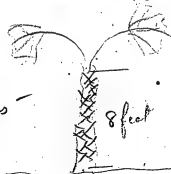
now I want it perfectly
clear of everything ~~except~~
~~the large trees~~, even if it costs
more - you are also
authorized to build a board
fence around the whole



I shall send you every kind of
grass seeds so you can
experiment in small patches
in the garden.

Also procure 4 Cabbage palmeries.
about 8 feet from the ground
to where the leaf rods come
out

Set them
out on
grounds -



Set them
Lattice work.
Complete from
ground to top

1000

What I desire in the flower line
is a few nice ones - of every variety
that I can procure,

you should carefully study
the books I send relating to
the care & planting of the
flowers,

I will send you about
1000 yards of common print
cloth, which you can place
around the more tender
shoots when a freeze approaches
This cloth will prevent radiation

If run through boiled linseed
oil & hung out until dry
it will prevent radiation
almost entirely -
will also ship barrel of
boiled oil -

We propose to have our ground
the best manured in Florida
Therefore you may order
for the River grounds, 6 ton
of oil cake, two ton of
phosphates, and two ton of
guano - and for the garden
4 ton of oil cake, 2 ton phosphate

and 4 ton of guano,
 providing the guano does
 not cost more than \$50 per
 ton =

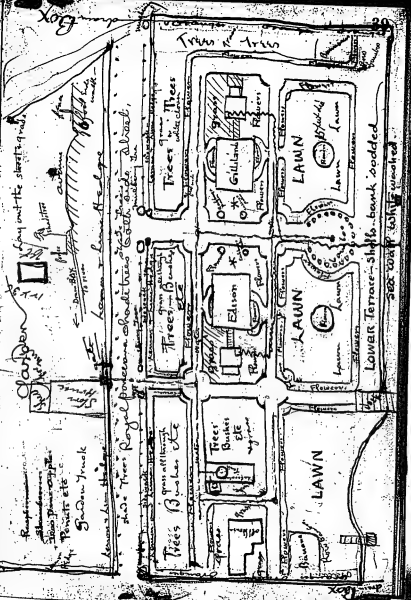
I think you should go back
 from the river & look for
black muck. fresh water
 muck, There are plenty of
ponds back of Myers which
 appear to have black ground
 you can hire a cart or
 use the lighter & yacht and
 get it up the river wheeling
 it to light by wheelbarrows
 & line of boards

It evidently wants some fine
 decayed fibrous spongy
 matter like they are putting
 in the Coconut hales to
 hold the manure & prevent
 it going clear through to
China - You can doubtless
 discover a good spot to
 get it which is accessible
 don't stint it but procure
 plenty of it - I want to carry
 Everything to ^{Extreme} Excess down here
 You will probably have to
 pay the owner of the
 ground for it. -

I think you better get
 some better shoots of Bamboo
 from Major Evans and
 plant them keeping them
 well manned + watered,

If Cherry trees will grow
 put out 2 or 3, Oakeart.
 Red etc.

2 - grape fruit trees



Plant in garden about 20 ft
square of Tobacco = garden

4 Trees of Japanese plums
in House plot.

1/2 dozen gooseberry bushes
House plot,

2. apricote trees House plot.

2 persimmons "

2 Tamarind "

shop

2 mulberry trees ~~outside~~
in street as shown on map

any tropical fruits you
hear of get shoots. if you can,
~~you~~

Among the Oranges get at least
2 Mandarin Orange trees,

2. Green gage plum in House plot

2

In garden set out a ~~double~~ row
sugar cane 50 foot long -

Plant in garden dozen hills
of poor mans dish rag -
its a species of squash
plenty at St Augustine,

Want ~~two~~ hives of ~~bees~~
bees ^{our garden} for our flowers, you
can purchase these about
2 1/2 miles from Myers on
the river road to Parkinsons
or up the river above Parkinsons

$$\begin{array}{r} 75 \\ 600 \\ \hline 45000 \end{array}$$

40

400.

350.

$$\begin{array}{r} 350 \\ 175 \\ \hline 3525 \end{array}$$

40.

$$\begin{array}{r} 525 \\ 75 \\ \hline 2625 \\ 3675 \\ \hline 1200 \end{array}$$

$$\begin{array}{r} 3660 \\ 2000 \\ \hline 7320000 \end{array}$$

30,000.

2000.

$$\begin{array}{r} 1830000 \\ 40 \\ \hline 7320000 \\ 32000 \\ \hline 120000 \\ 120000 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 43000 \\ 162000 \\ \hline 210000 \\ 183000 \\ \hline 27000 \end{array}$$

$$\begin{array}{r} 200 \\ 400 \\ \hline 200 \end{array}$$

15 ~~ans.~~

$$\begin{array}{r} 15 \\ 1200 \\ \hline 100 \end{array}$$

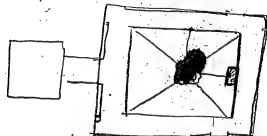
$$\begin{array}{r} 15 \\ 1200 \\ \hline 100 \end{array}$$

$$\begin{array}{r} 800 \\ 600 \\ \hline 200 \end{array}$$

$$\begin{array}{r} 15 \\ 1200 \\ \hline 100 \end{array}$$

160.

Edison House,





$$\begin{array}{r}
 15 \overline{) 4300} \quad (280 \\
 \underline{300} \\
 1300 \\
 \underline{1200} \\
 100
 \end{array}$$

8

$$\begin{array}{r}
 4300 \\
 \underline{2000} \\
 2300
 \end{array}$$

2000

$$\begin{array}{r}
 43000 \\
 \underline{8000} \\
 34000 \\
 \underline{2000} \\
 32000 \\
 \underline{10000} \\
 22000 \\
 \underline{10000} \\
 12000 \\
 \underline{6000} \\
 6000 \\
 \underline{6000} \\
 0
 \end{array}$$

4

2

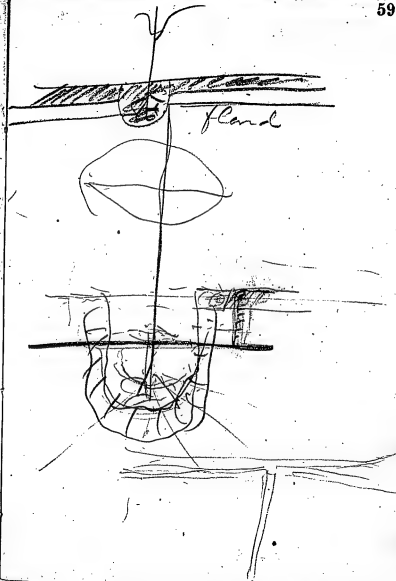
$$\begin{array}{r}
 25 \\
 \underline{29} \\
 225
 \end{array}$$

15 ton for Lighter Load -

25-lbs per square foot,

4300 tons,

280 lighter loads



Fort Myers Notebook, N-86-04-07

This notebook covers the period April-May 1886. All of the entries are by Edison. Many of them concern the direct conversion of heat into electricity, the lines of force of the earth around the sun, and atomic and molecular structure. Included also are notes and drawings relating to armature windings and connections, the phonoplex, the grasshopper telegraph, the tasimeter, electric railways, an archimedes screw to propel a steamer, the manufacture of silk, and the separation of butter, cream, and water from milk. The spine is labeled "28." The book contains 286 numbered pages.

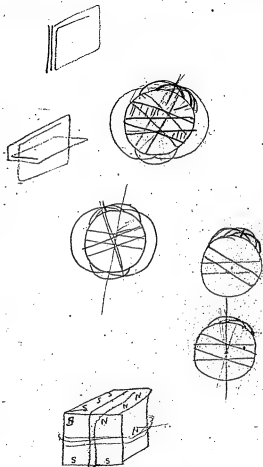
Blank pages not filmed: 42-43, 92-99, 214-215, 242-243, 276-286.

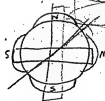
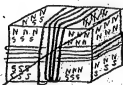
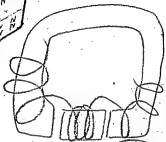
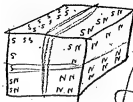
Missing page numbers: 17-18, 263-264.

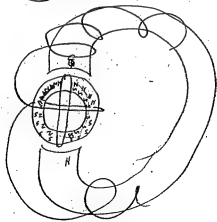
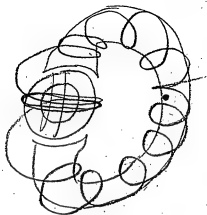
XE-172

N-86-04-07

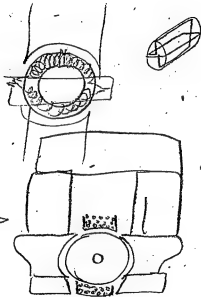
1



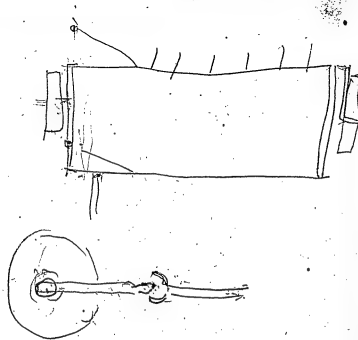
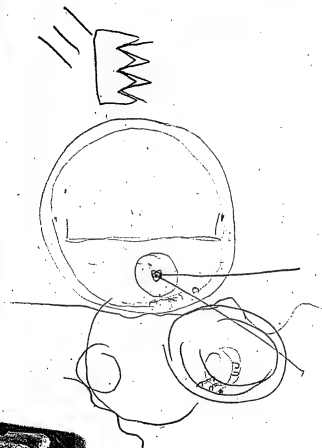




April 7 1886 Tal.



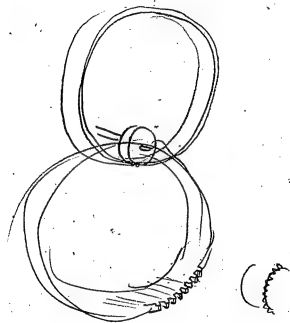
Wind each turn round then before
going to turn wind at right angles -
then each loop will be practically
2 but only $\frac{1}{2}$ will cut free lines of
force & the other half will be
lost.

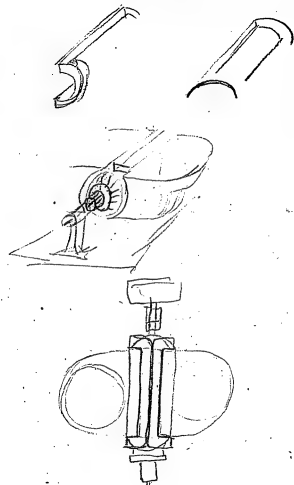
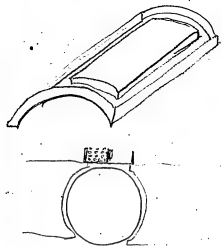


E

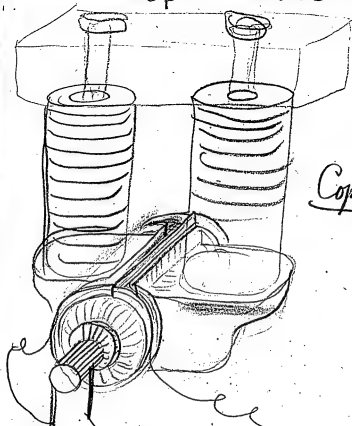
H

$\frac{1}{2}$
 $\frac{1}{2}$
 $\frac{1}{2}$



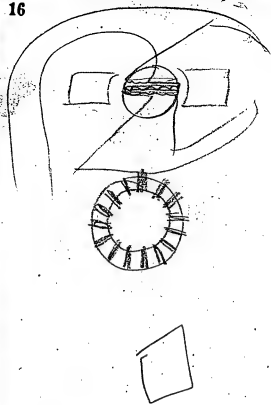


April 8 1886 TAE

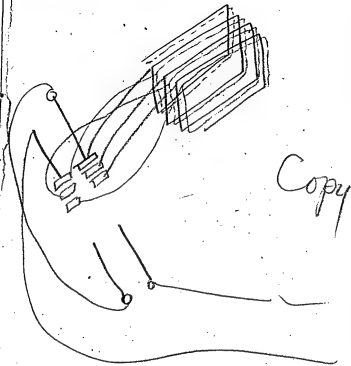


Copy

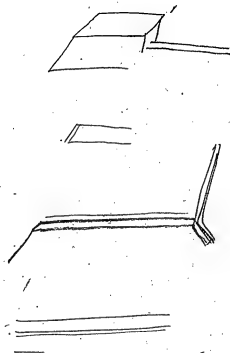
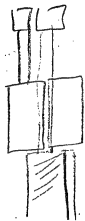
Extra coil fixed on
outside of armature
+ at right angles to coil on
armature with same current through it
having same ampere spirals as armature.

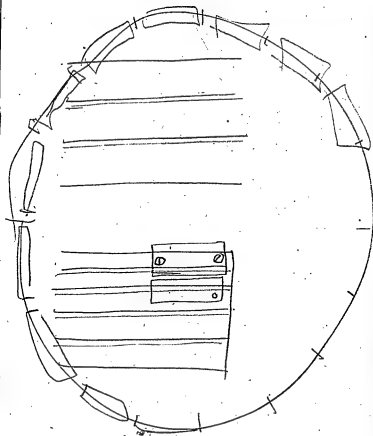
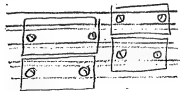


April 8 1886

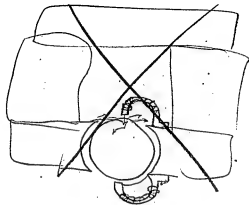


Two separate and distinct windings
on one armature each with separate
commutators 60 volts each - The
two are connected in series at the
brushes so the current of one tends to make
a magnetism in armature the opposite of the other.

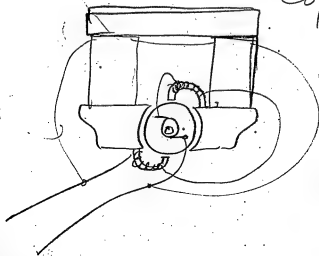




April 8 1886 7a2



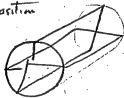
OK

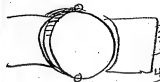


Copy

April 8 1886 T.O.E.27
Copy this

Wind armature thus one turn around
 then before going to commutator another
 turn round but at right angles + so on
 winding in regular way - Thus $\frac{1}{2}$
 the wire valueless but helps to
 correct the lines of force
 for the other so the result is same
 as only $\frac{1}{2}$ wire coiled on loaded armature
 anyway owing to position of brushes.





60.

40

60.

396

$$\frac{5}{10,000}$$

$$\frac{10,000}{10,000}$$

$$\frac{10}{1,000}$$

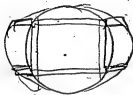
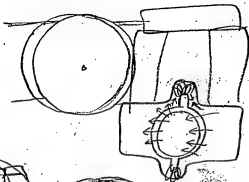
10

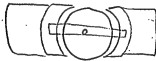
60.

1

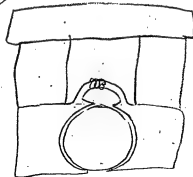
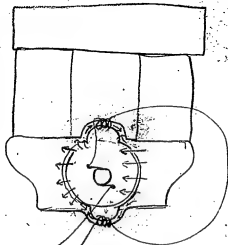
$$\begin{array}{r} 25- \\ 60 \\ \hline 1500 \end{array}$$

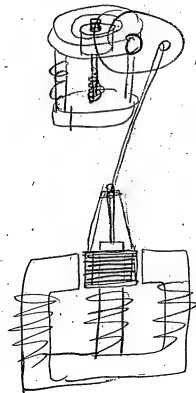
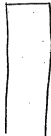
$$\begin{array}{r} 396 \\ 396 \\ \hline 39600 \end{array}$$

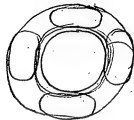
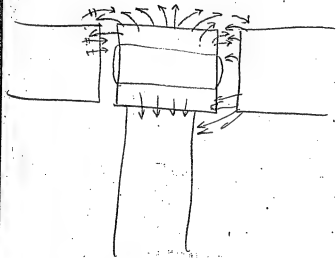


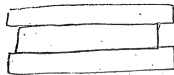
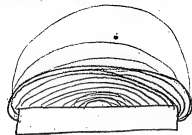
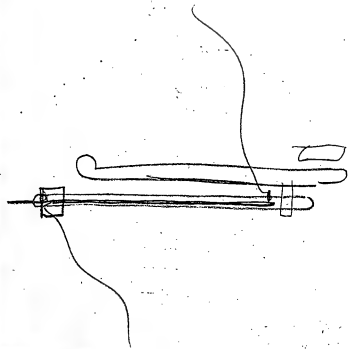


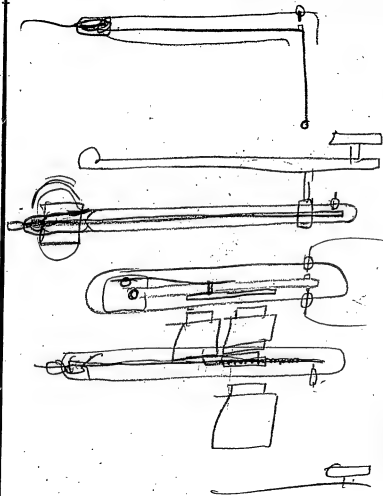
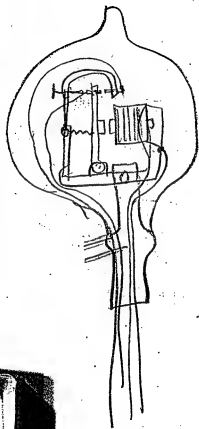
April 8 1886 tar

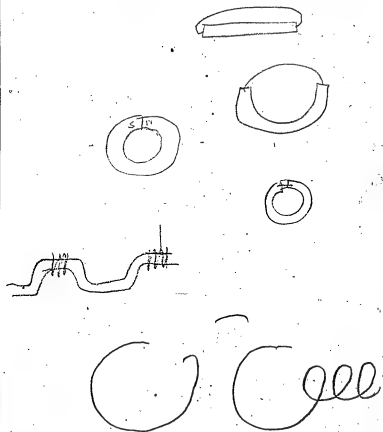
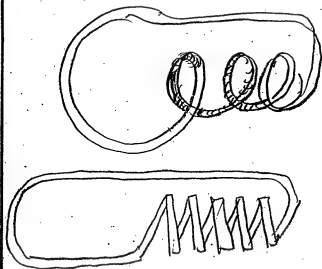


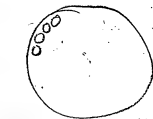












100.

213.

212,

130 -

600 - 213,

730,

212,

108 -

108 -

730,

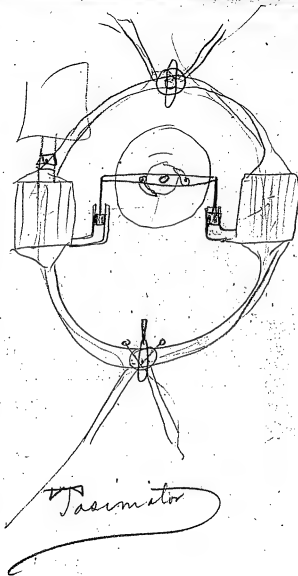
8,38,

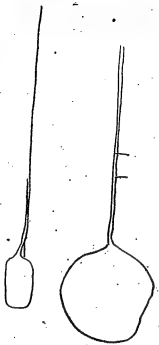
120,



$$\begin{array}{r} 25 \quad 150 \\ 13 \quad 130 \\ \hline 157 \quad 280 \\ 5 \end{array}$$

730.

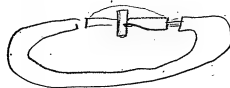
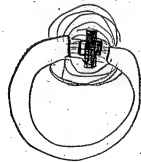
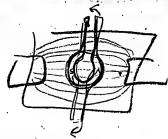
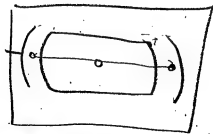
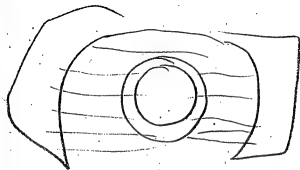


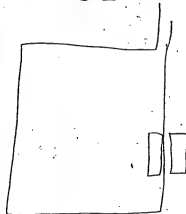


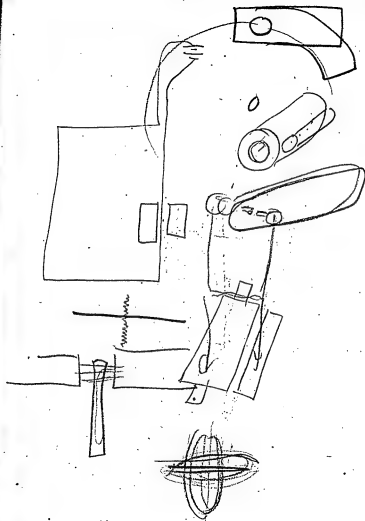
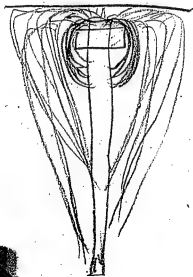
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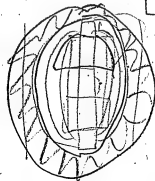
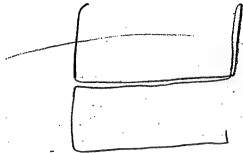
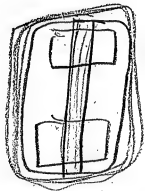
50

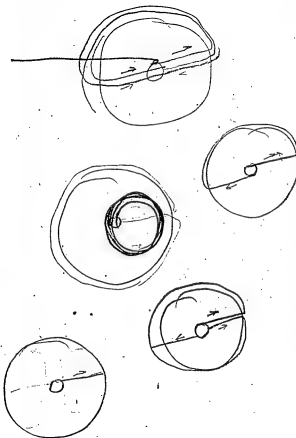
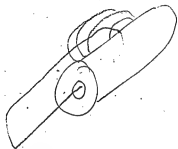


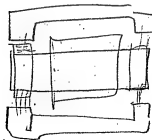
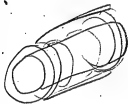
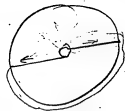


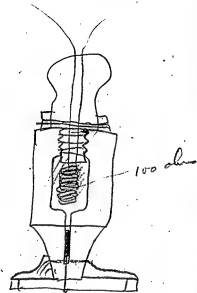


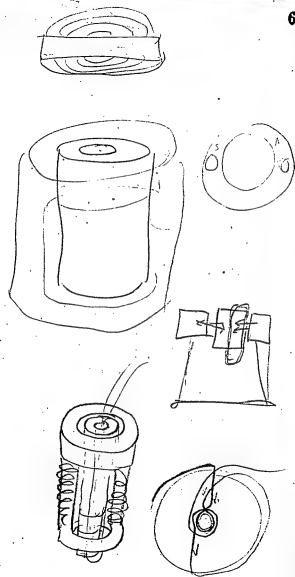
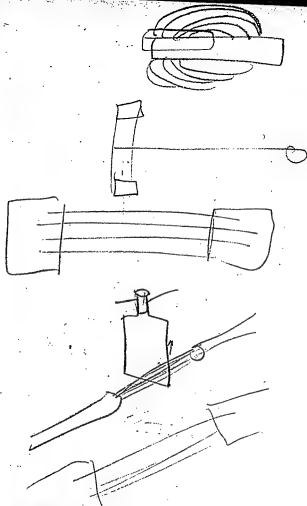


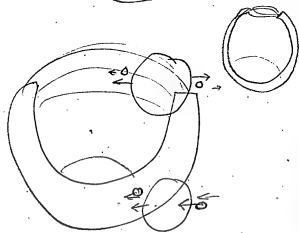
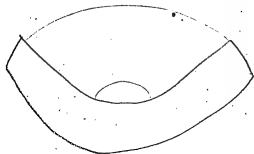
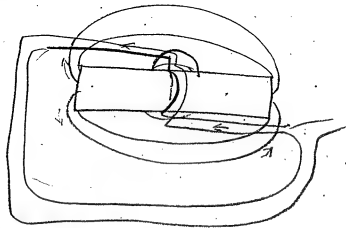
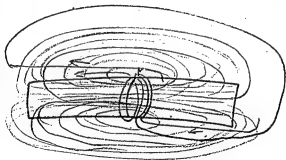


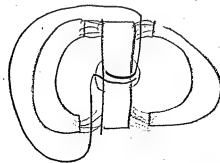
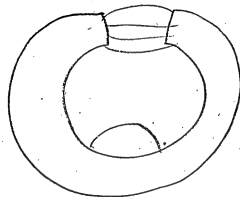
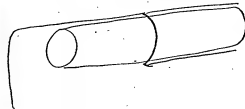


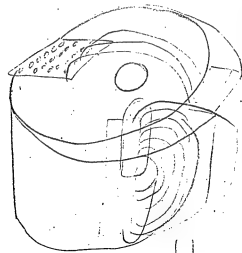
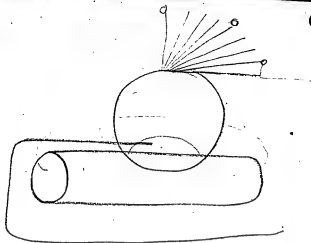


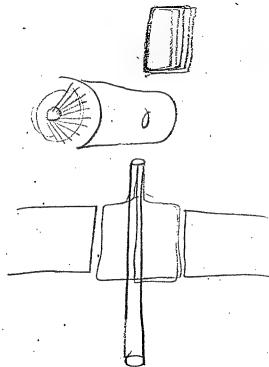


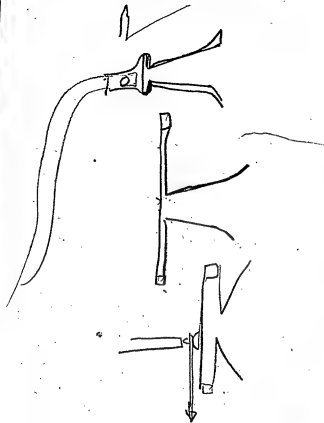
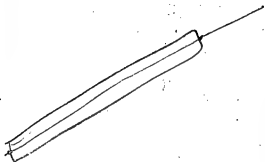


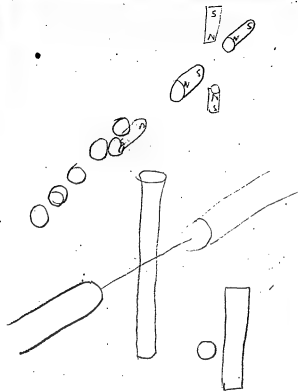
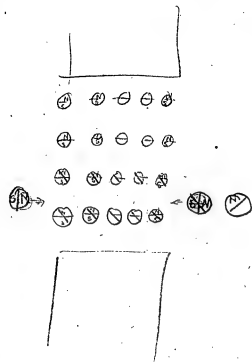


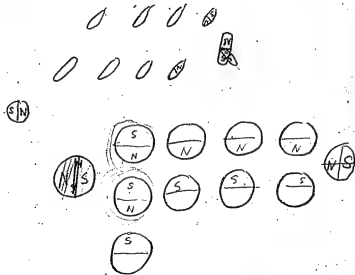
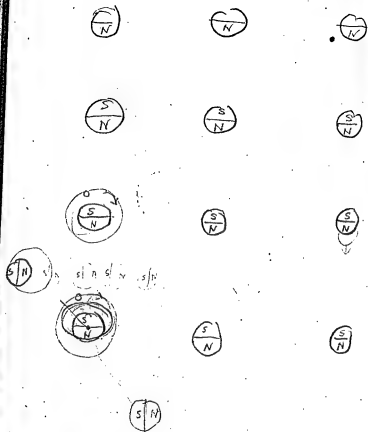


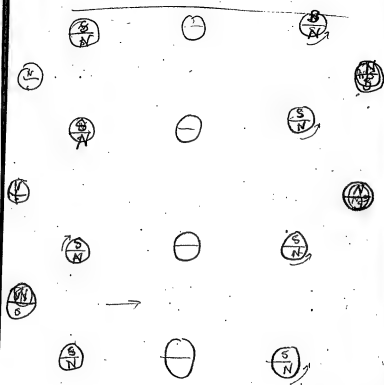
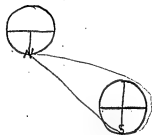


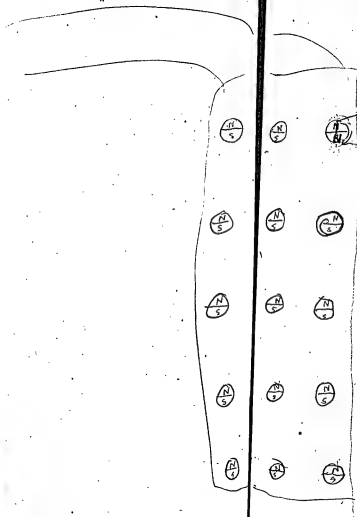


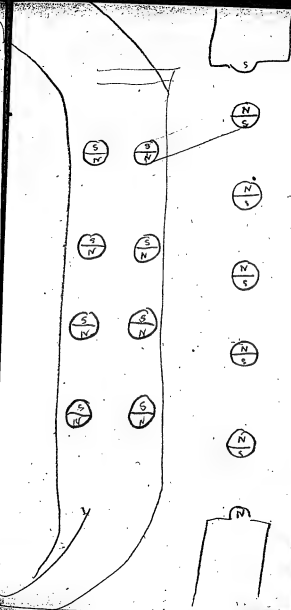


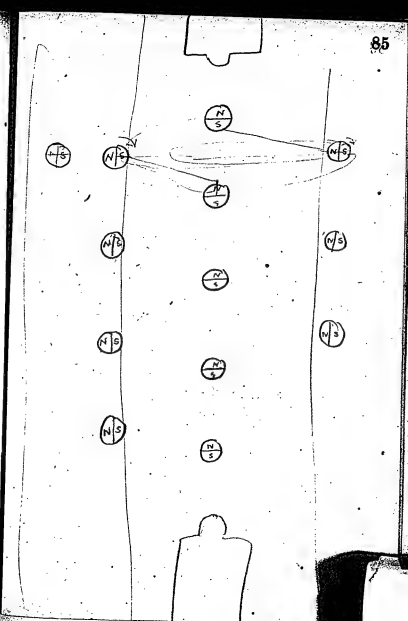
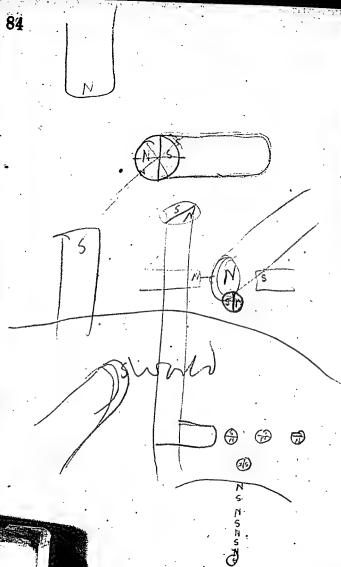






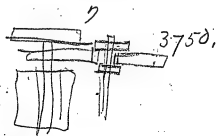
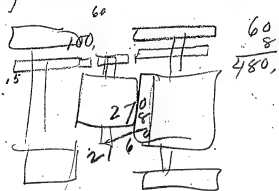






$$\begin{array}{r}
 200 \\
 150 \\
 \hline
 1000 \\
 200 \\
 \hline
 3000 \\
 3750
 \end{array}$$

150



$$\begin{array}{r}
 3750 \\
 9 \\
 \hline
 5-10
 \end{array}$$

$$3750 / \frac{33000}{33750} (9)$$

$$9, \frac{30}{270}$$

4



10

30

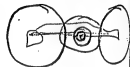
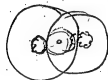
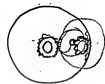
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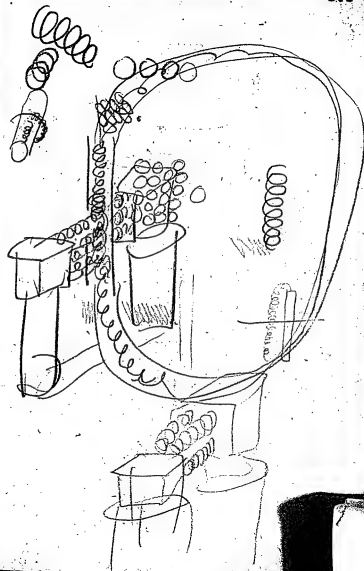
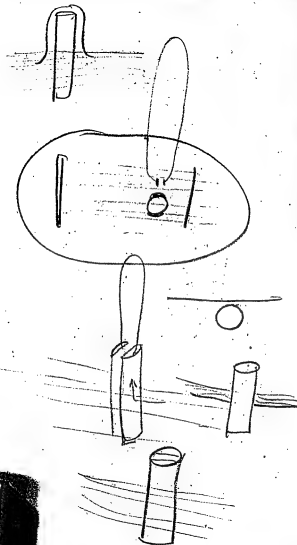
1200

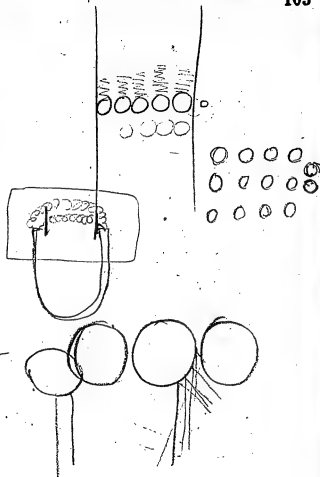
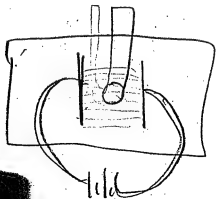
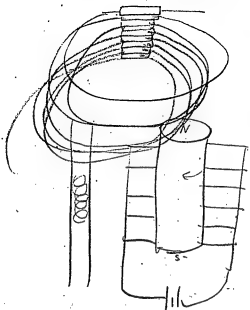
$$3750 \frac{270}{20} \frac{5-400}{5-400}$$

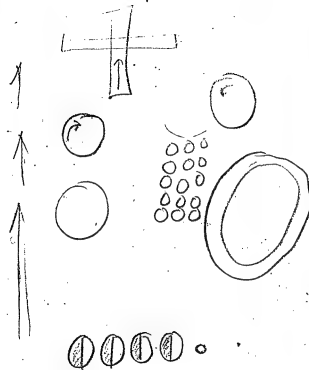
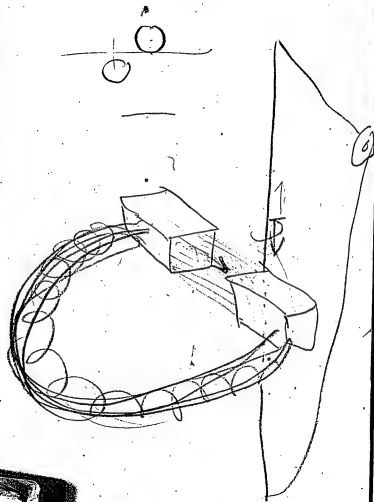
$$12 \frac{1500}{30} \frac{45000}{360} (3750)$$

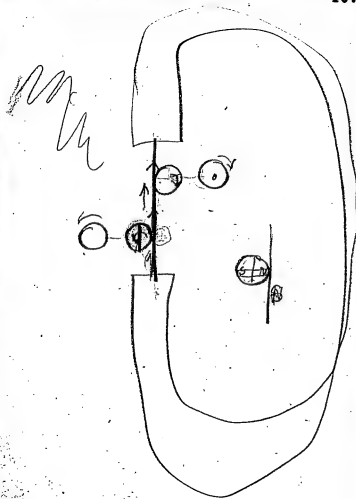
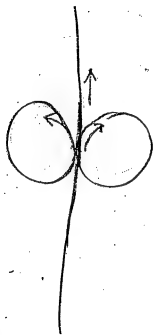
$$\begin{array}{r}
 270 \\
 1350 \\
 \hline
 270 \\
 405
 \end{array}$$

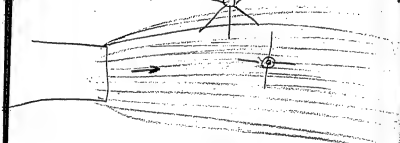
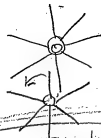
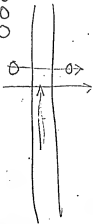
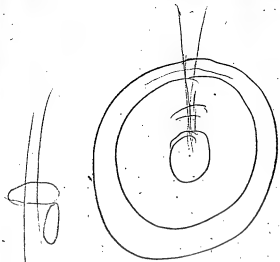


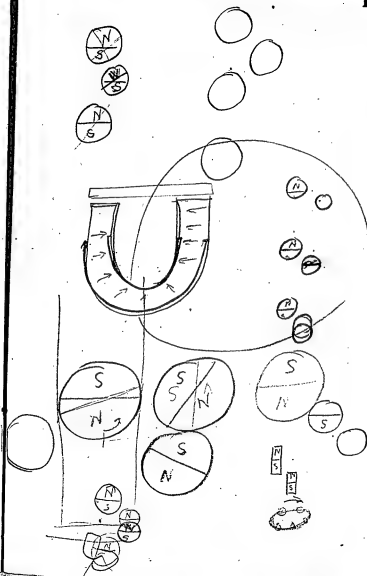
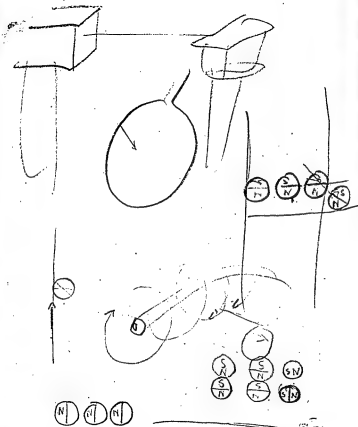


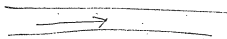
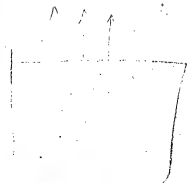
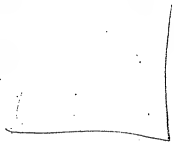


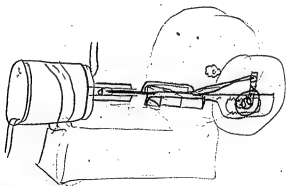
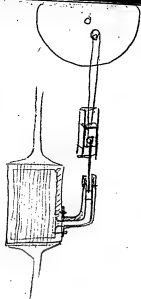












$$\begin{array}{r} 190 \\ 60 \\ \hline 6 \overline{) 1310} \\ \underline{21-4} \end{array}$$

||||| |||

$$\begin{array}{r} 1280 \\ 960 \\ \hline \end{array}$$

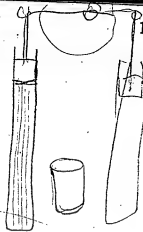
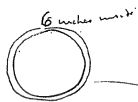
6 dept. to inch
2.64

$$\begin{array}{r} 30 \overline{) 180} \\ \underline{180} \\ 0 \end{array}$$

$$\begin{array}{r} 2' 32. \\ 68. \\ \hline 112 \\ \hline 180 \\ 32 \\ \hline 212 \end{array}$$

$$\begin{array}{r} 340 \overline{) 960} \\ \underline{140} \\ 220 \\ \underline{200} \\ 200 \\ \underline{16} \end{array}$$

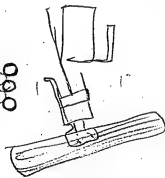
$$\begin{array}{r} 264 \\ 12 \\ \hline 328 \\ 264 \\ \hline 29.68 \end{array}$$

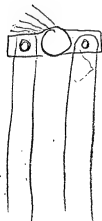
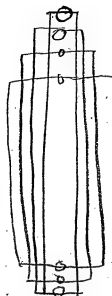
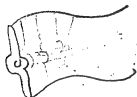
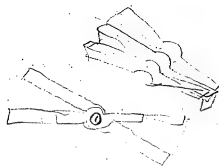


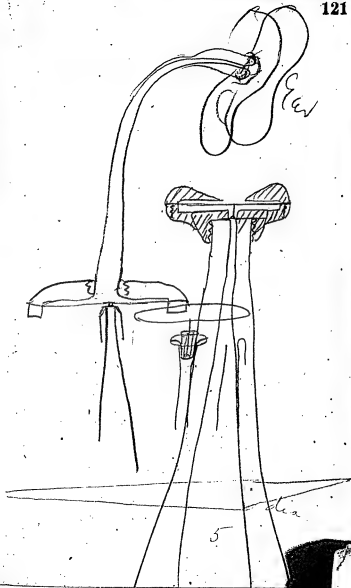
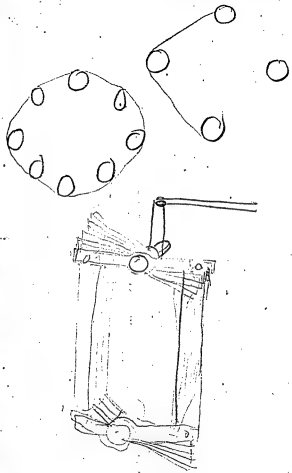
48 inches -
180.
36.
24.
64.
150.

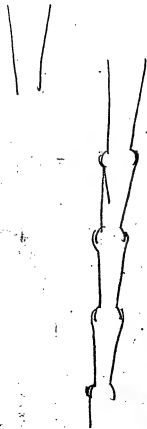
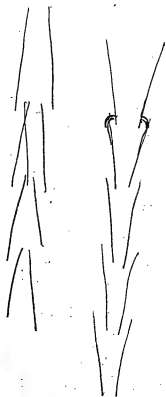


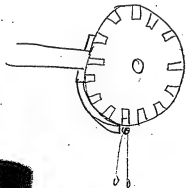
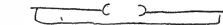
150.



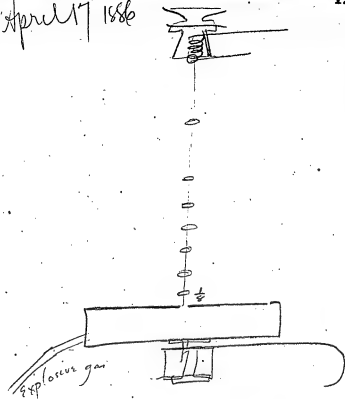




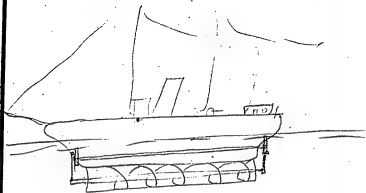




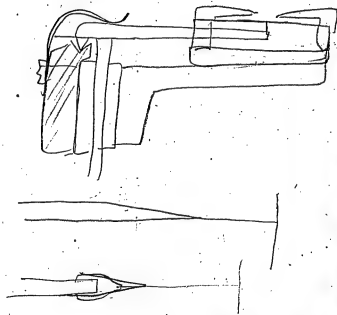
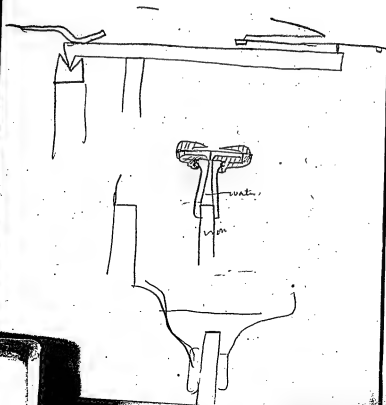
April 17 1886

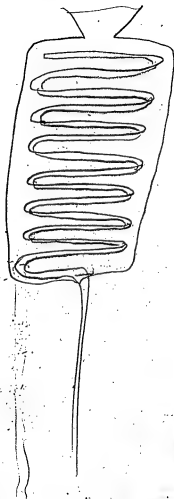
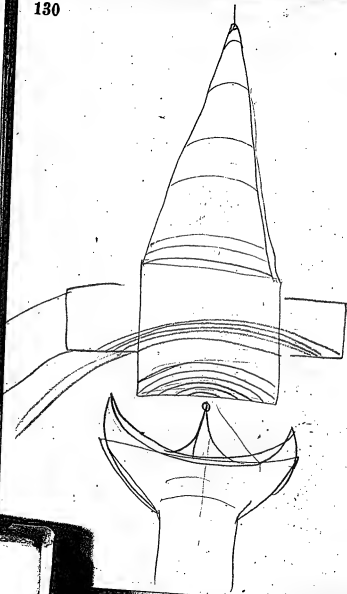


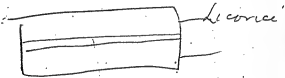
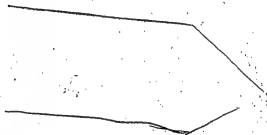
April 16 1886 Cal



Archimedes screw to propel
Steamer







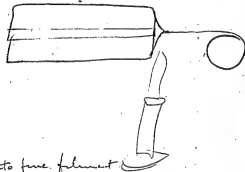
Callodine

Heat & draw out to silk

April 16 1886 -

Mfr Silk -

glue mixed with Bichromate Potash in
proper portion & enclosed in Hydrocarbon



drawn out into fine filament
then dissolved in a solvent of the
Hydrocarbon & resultant Bichromate glue
which is insoluble ~~in~~
exposed to sun to render insoluble

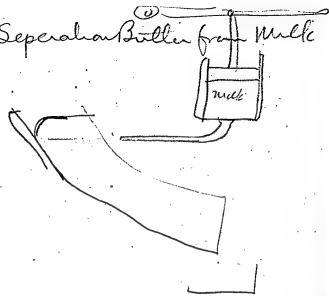
April 16 1886

Mf Silk -

Bases - Collodion - Cupric Ammon paper
 Gutta - Rubber dissolved in Benzene or
 Bromophene - Rubber - Benzol mixed
 with as much Rosin & other Hydrocarbons (Syrup)
 as it will take & still look resistant together &
 not be too brittle. — Balata & also
 with Hydrocarbons, — with Rubber etc
 Esterin could be glue, Licorice,
 Malasse's Candy — a fabric of
 various lengths could be made
 by working Malasse's candy ~~with~~ over
 & over by pulling - using Rubber
 solution or Balata & Rosin Compound.
 dissolving off - water,

April 16 1886 Tae

Separation Butter from Milk



Milk forced in very fine stream
at great velocity against an
exceedingly fine point surface breaking
globule. This moves down angle
board slowly while milk
flows quickly

April 16 1886 Sat

Separation Cream from Milk

Try Graham Dialysis - use
also Electricity through porous
diaphragms.

Use porous diaphragms various
thicknesses & substances &
use Vacuum underneath

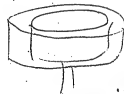
use air pressure on one
reciprocation to free the
pores of globules the next reciprocation
use Vacuum to draw through
water of milk - the idea
is to get the water out &
leave the globules -

April 16 1886 T.A.L.

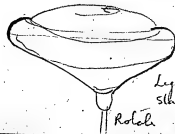
Separation Water from Milk -
= Evaporate in Vacuum.

Freeze it -

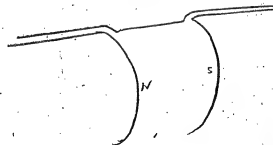
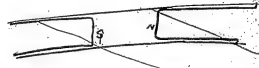
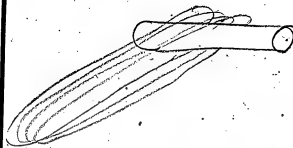
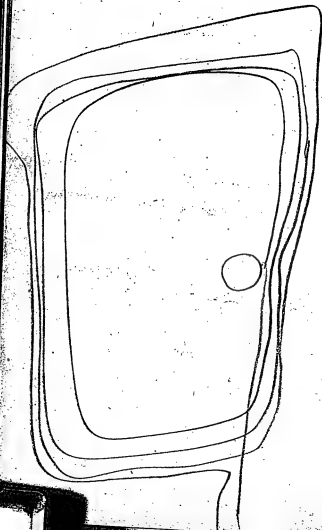
Try filtering it through a tube
Containing large quantity of
fine powder. Use Vacuum -
wash Cream out of powder
~~or get~~

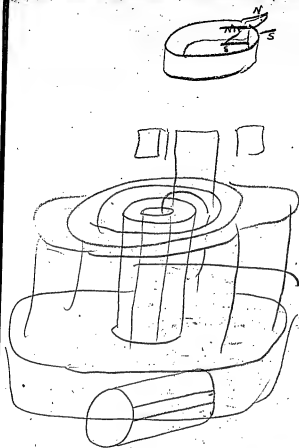
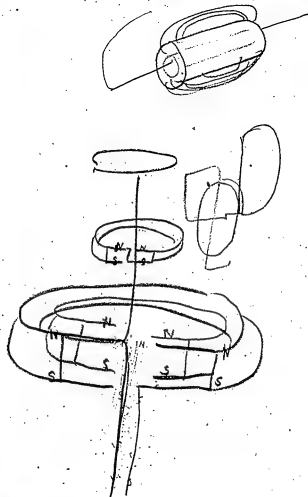


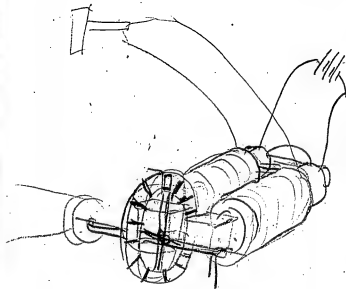
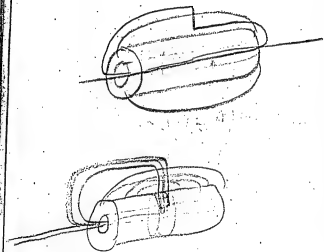
Centrifuge
through a porous
substance

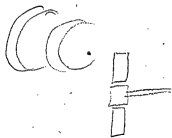
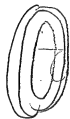
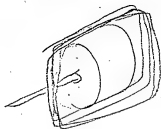
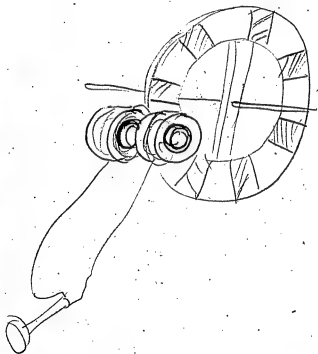


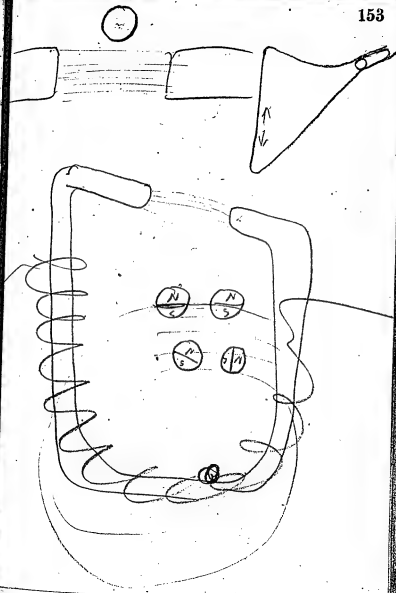
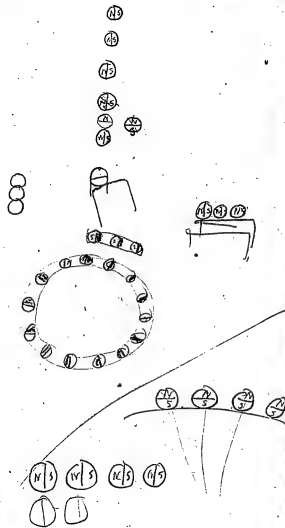
Lighter globules
slightly near center
Roth

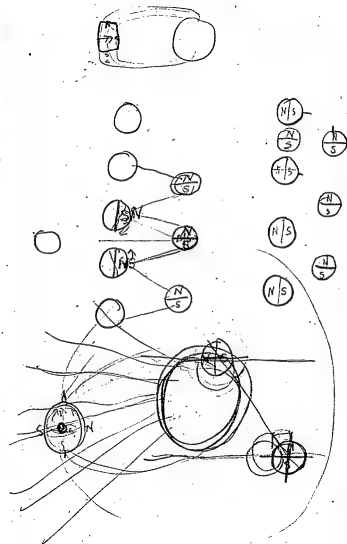
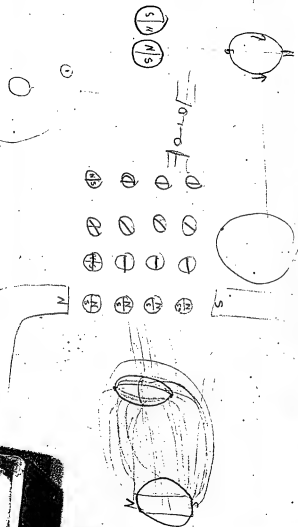


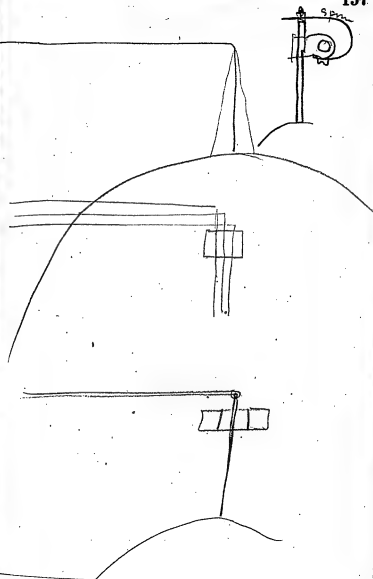
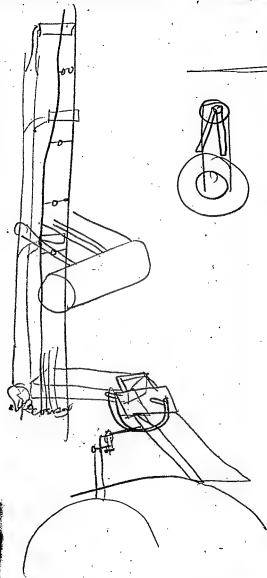




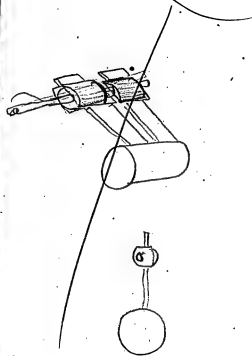


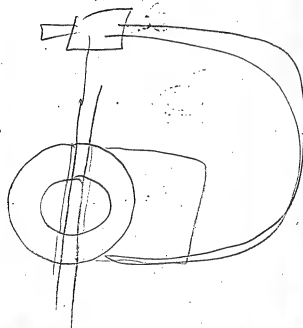




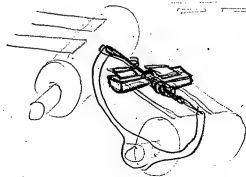
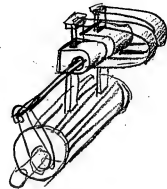


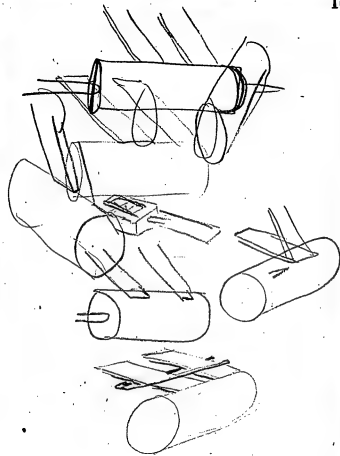
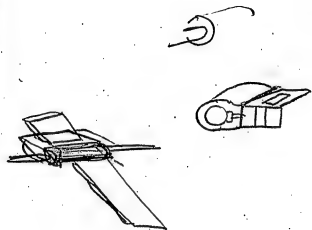
April 17 1886
Elec RR

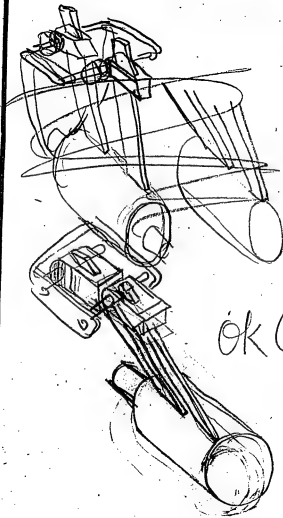




April 17/1886 ERR



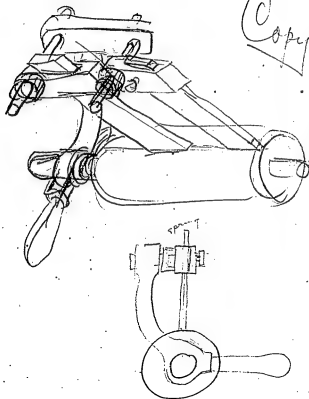


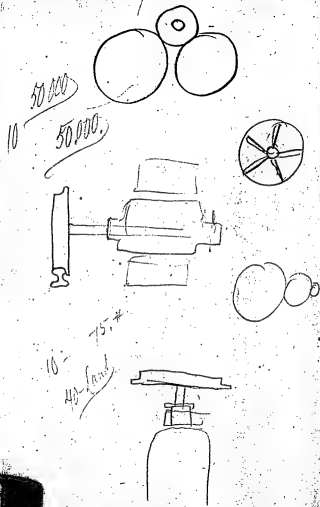


OK Copy

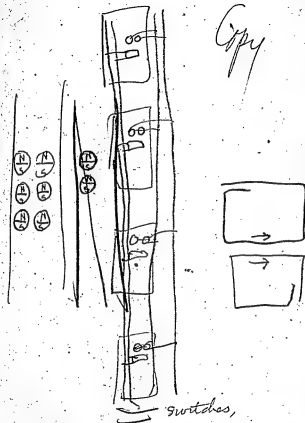
April 16, 1869
E.R.

Copy

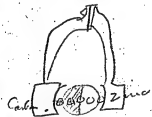
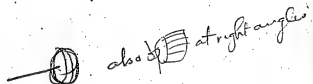
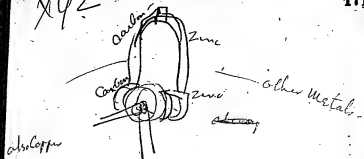




Apr 17 1986



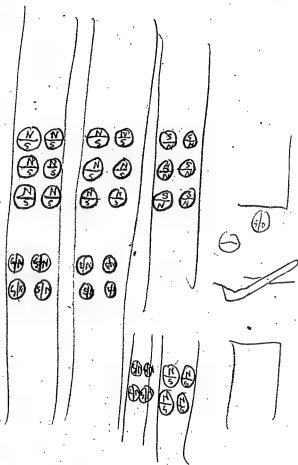
XYZ



potential polarization
of particles



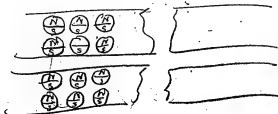
wire wound both
ways

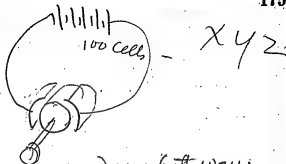
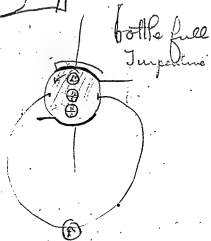
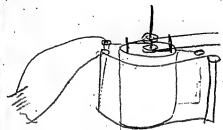


X 42

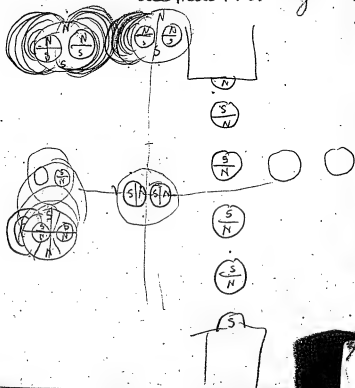
If Electricity passing in a wire
is given off as heat, Then a wire
heated and in being conducted. shines
under proper conditions for luminous
in E.

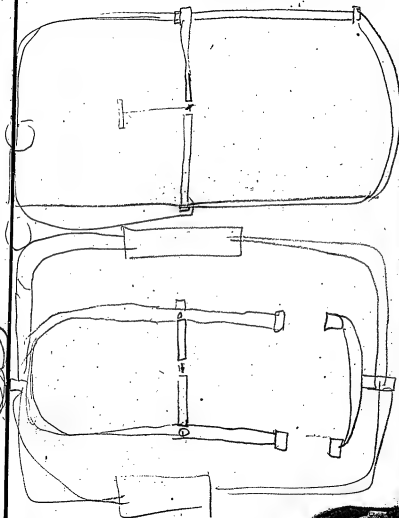
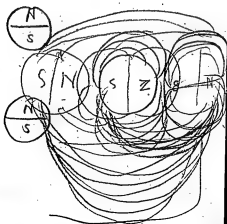
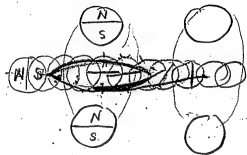
The application of heat to a wire &
letting it conduct to us
from a magnetic field
ought to give E

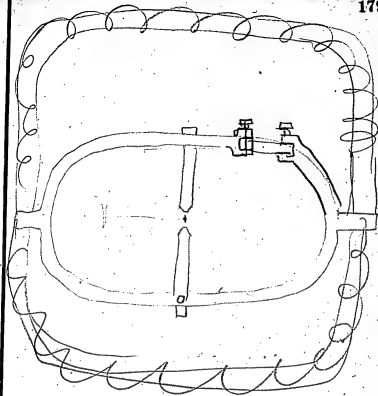
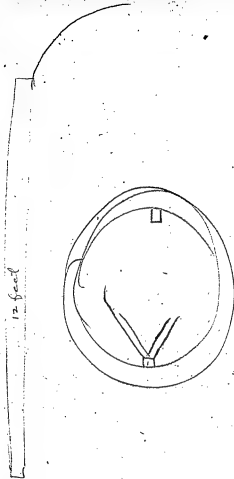


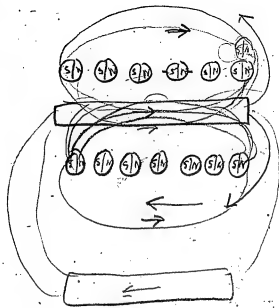


wind use both ways
use Hard rubber cylinder





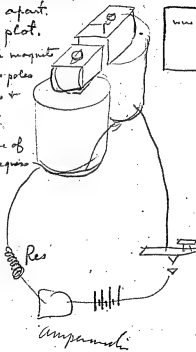




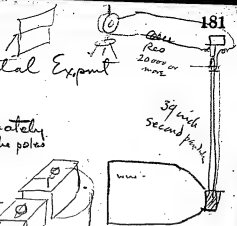
Fundamental Expt

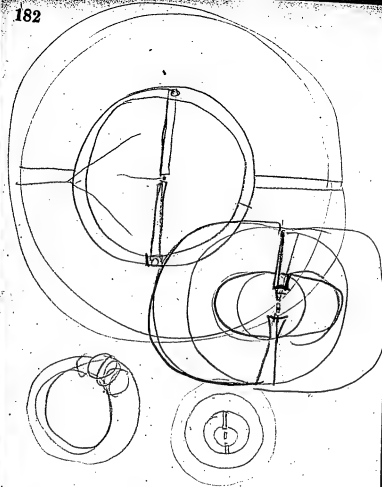
determine accurately
the Relative EMF with the poles
at dif distances apart.
in thousands plot.
also substitute magnets
with exactly same poles
but dif lengths &
make curve -

also run curve of
EMF at dif degrees
of saturation
with poles at
various dists

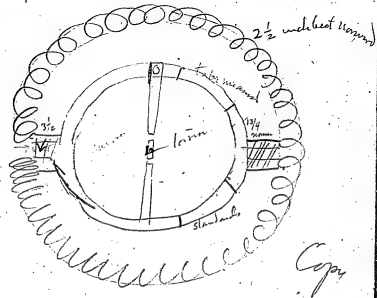


Pendulum should only make a
single swing





April 17
fundamental magnetic Exp.



Magnetic Barrels -



Malachite Fe.

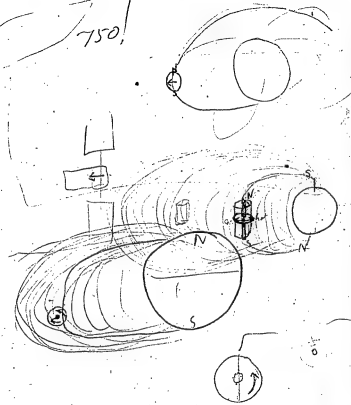
S.
min.

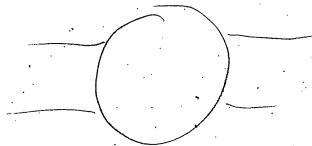
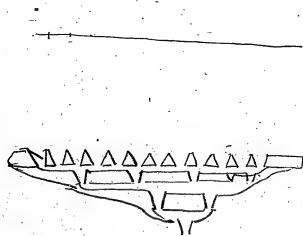
380

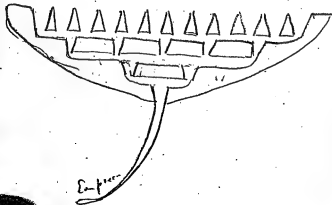
485

11

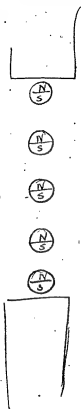
750

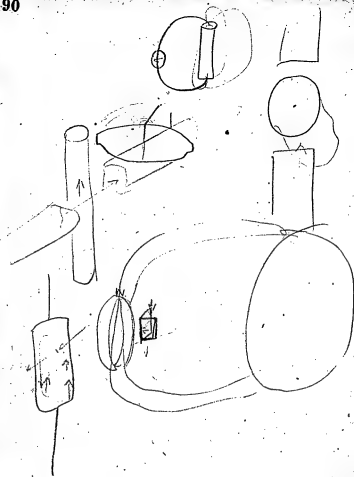




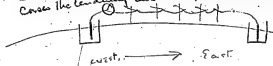


Empire





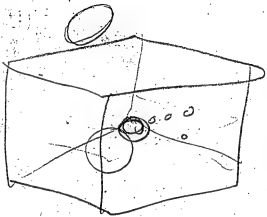
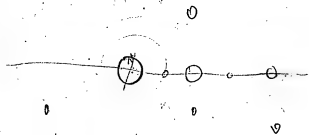
The rotation of the Earth around the sun.
Cut the lines of force emanating from the sun, the rotation of this causes one side of the Equator to be N & the other side P but not current. Now the rotation of the earth with sun axis causes the tendency in one half the earth to be neutralized.



porous cell filled with Sulphate
Zinc & amalgamated Zinc
Electrode.

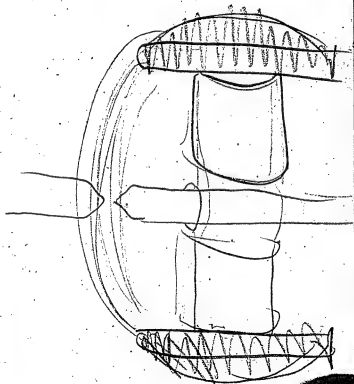
test if there is a current
from East & west or
north & south.
2500 feet apart.

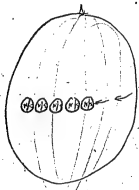
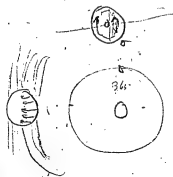
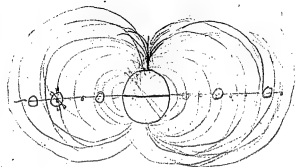
& increases the other thus a strong current
Circulates around the Earth from East to West.
This causes a north & south magnetic pole.
The mutual attraction of the whole Equator causes
the tendency of the Earth to leave its orbit.

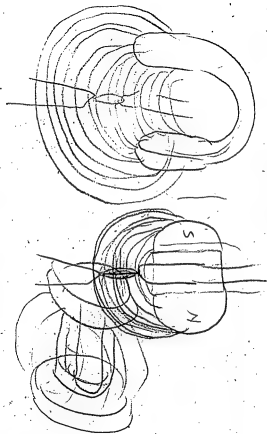


The motion of the Earth due to the seasons has to be explained

The sun must have an orbit then which produces a disturbance or displacement of the lines of force



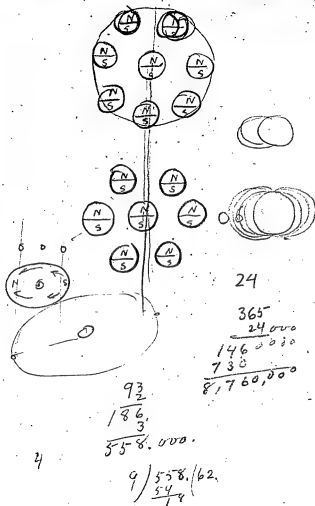
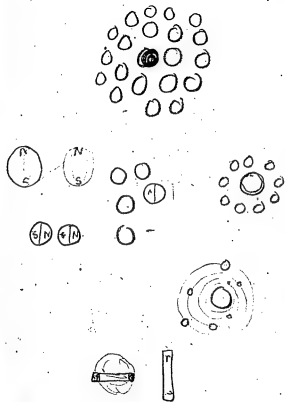


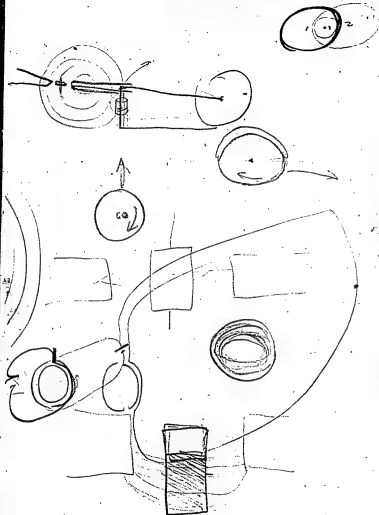
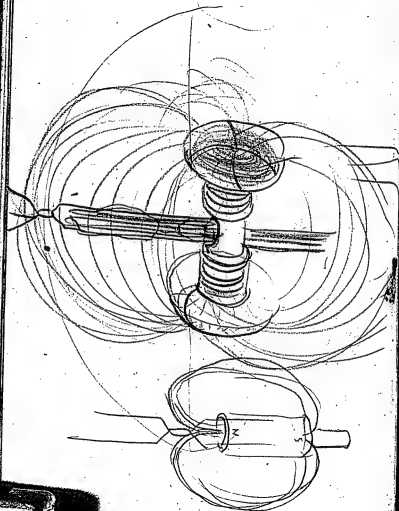


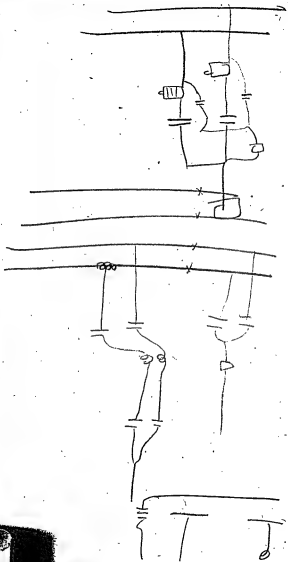
all atoms have a N.S polarity
 The N of the atom points equatorially +
 not towards the South Earth
 pole - gravitation is on mutual
 electrical attraction of all the atoms
 The reason of the difference of
 weight of different substances
 is that each substance has a
 different number of atoms
 or molecular groups. the atoms
 of each molecule are closer together
 being greater in number in each
 molecule in diff substances
 The molecules may all be the
 same distance apart. The
 Total attraction is greater for
 the Earth as the molecules atoms
 are greater - all substances

All substances we call
 Elements are composed of
 molecules of different atoms
 all atoms are primal hence
 matter is composed primarily
 of one substance, the primal
 molecule, Our solar system
 is a Cosmical Molecule.

Different molecules say of Iron
 are composed of as many atoms
 as there are lines in the spectrum.
 Each atom has a different motion
 in the molecule, each atom rotates
 on its axis with inconceivable
 velocity.

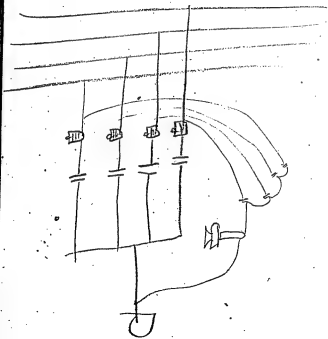






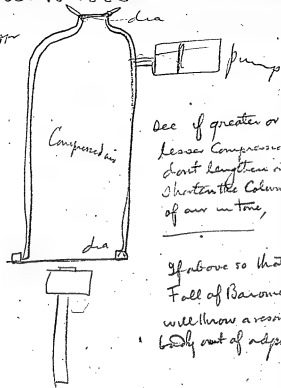
April 18 1886 TAC
Grasshopper -

To get rid of heavy induction waves



April 18 1886 tar

Grindhorn

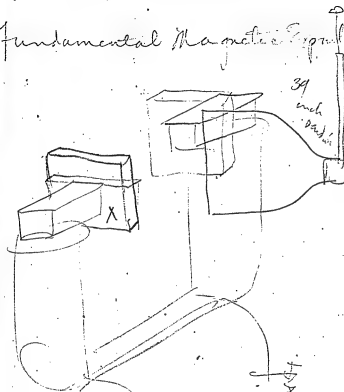


See if greater or
lesser Compression
don't lengthen or
shorten the Column
of air in tube,

If above so that
Fall of Barometer
will throw a similar
body out of adjustment

April 18 1886

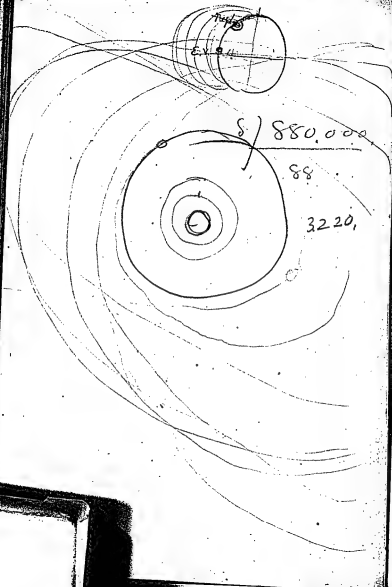
Fundamental Magnetic Expt



Put poles inch
apart & then make lot of
piece 'X' through which
lines from must pass & see

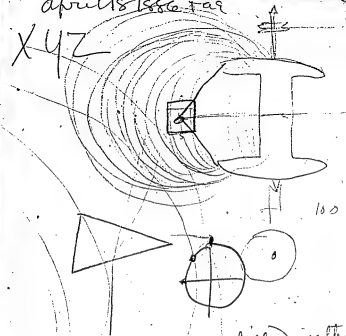
Amperes

if there is any such thing as Specific Magnetic Induction
Capacity



april 18 1886 T. A. R.

XYZ



pressures tubes filled with
liquids parallel + at right
angle through a prismatic
beam of light.

Pass a beam of Violet light
down a liquid in a tube
& pass the tube parallel
right angle to a beam of red
light also arrange the



10 to sec
40 40

April 18 1886 xae

Telephanelecum Empire



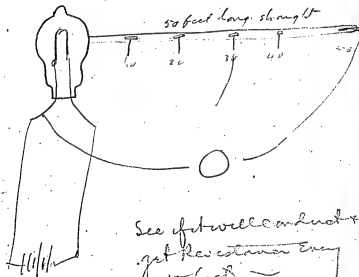
Fr



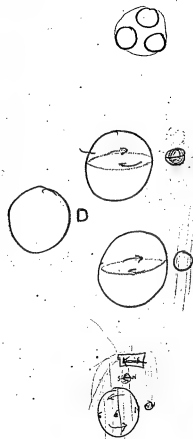
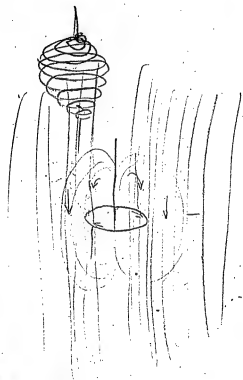


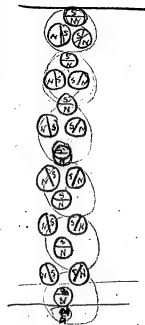
April 18 1886

Fundamental -



See if it will conduct
get Resistor every
10 feet -





April 15 1886 tar

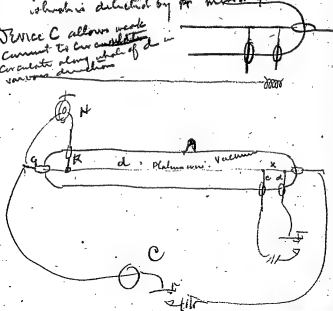
223

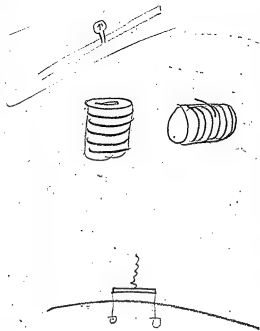
Experiment is to determine if heat conducted along a wire is hastened or retarded by the passage of an Electric Current.

The X part is heated by a battery so X becomes white & the supports red. This is conducted along d - when heat

Thermos' metal with plat. it sets up a Thermos Cont
which is detected by the mirror galvan.

Device C allows weak current to be ~~conducted~~ ^{circulated} along whole of ~~the~~ ^{various directions}

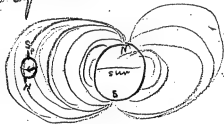




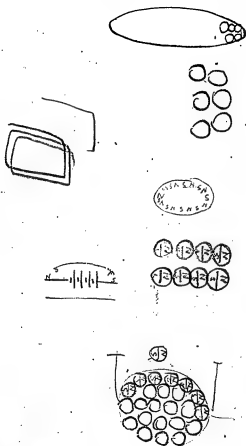
April 18 1886 -

Fundamental.

Theory that gravitation is circulation of an Electric Current around the entire Earth due to rotation of Earth on axis, cutting the lines of force thrown out into space by the sun which is a magnet whose poles are parallel with the poles of the Earth. The Current Circulation ~~for~~ around the Equator, which is its greatest current. ~~is~~ to both poles in lines parallel with the Equator thus

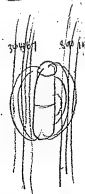
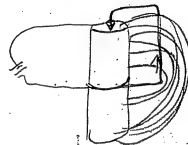


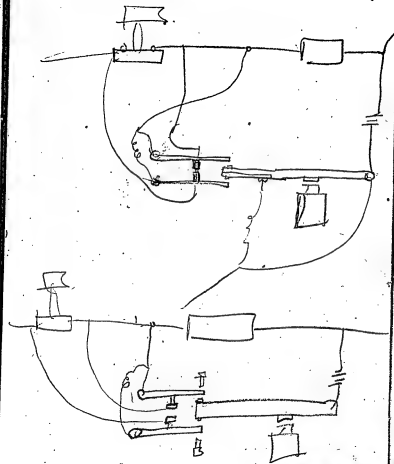
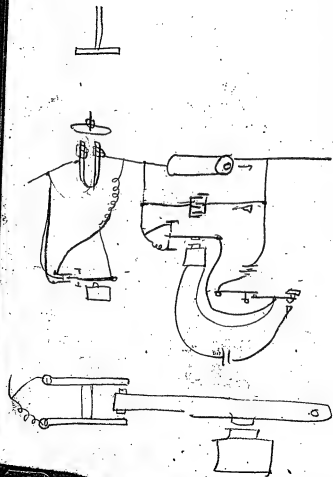
The weight of all matter increases diminishes
(10) attraction diminishes until we reach the center of the Earth. ~~It~~ ~~is~~ ~~as~~ ~~the~~ ~~matter~~ ~~insulated~~ ~~on~~ ~~the~~ ~~surface~~ ~~of~~ ~~the~~ ~~Earth~~ ~~is~~ ~~attracted~~ ~~by~~ ~~static~~ ~~attraction~~. hence it weight should diminish as we recede from the Earth. a piece of matter which weighs one lb by a spring balance on the sea level



shared weight less 5 miles from the Earth
in a balloon. Now here is an experiment
to determine if the attraction due to any
current passing around the earth
or on a conductor is perceptibly
greater when allowed to pass to a part of the
earth current or insulated therefrom &
ably subject to static attractions.

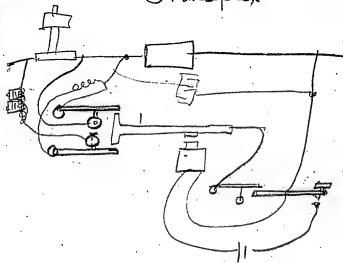




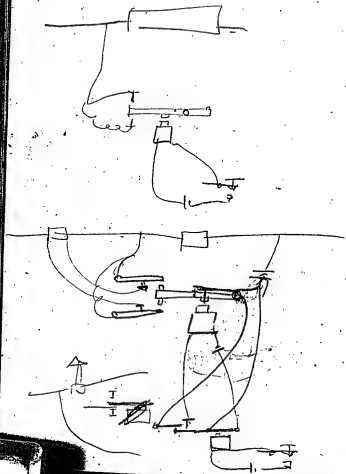


April 21 1886

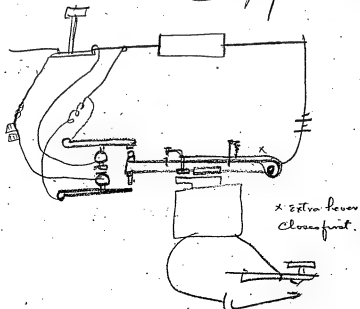
Phonoplex -

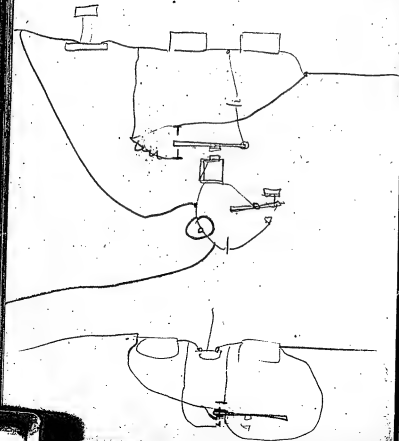


Short cktg phone partially to weaken
outgoing signals - + also to
only use battery while sending
a dot or dash

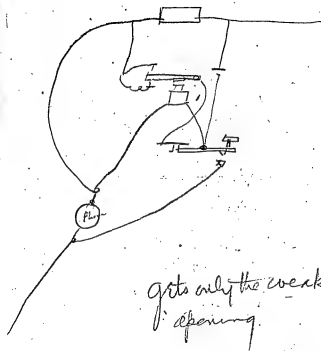


Phonoplex April 21 1886 far
Copy

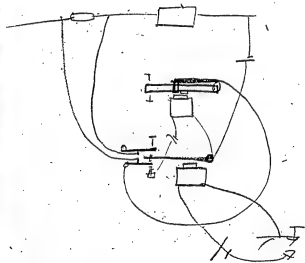




April 21 1886 TAE

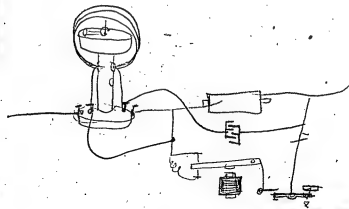
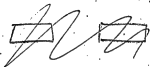


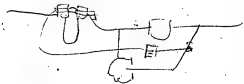
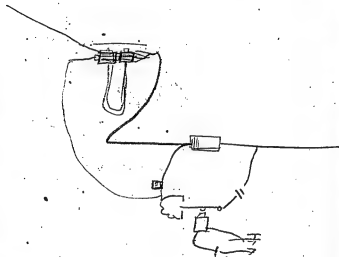
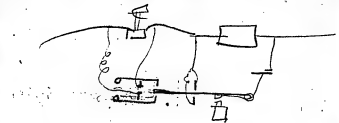
gets only the weak
opening.



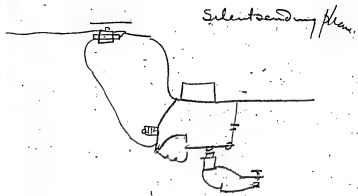
April 21 1886

Phonoplex - got

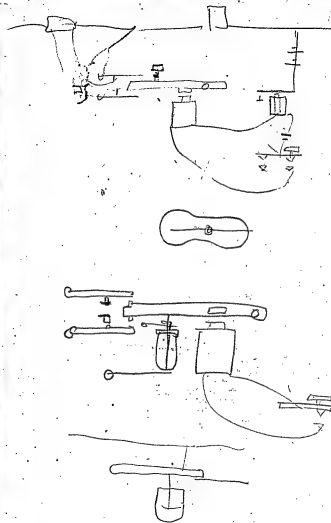
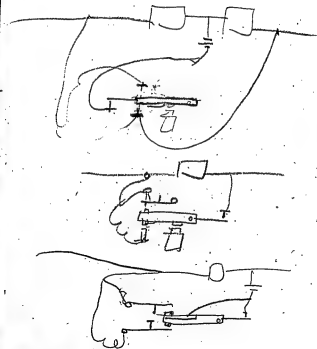


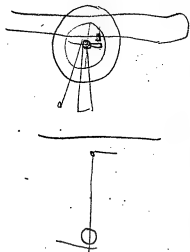


April 21 1886 TAP
Phonoplex

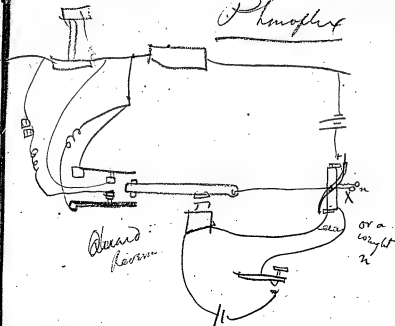


Bug is characterly phone LF when receiving



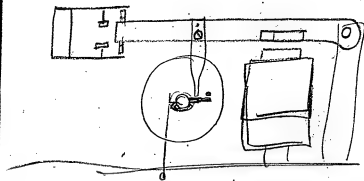
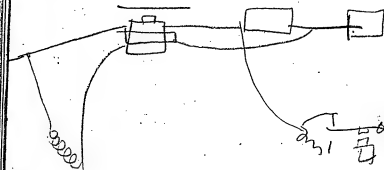


April 21 1886 TAC

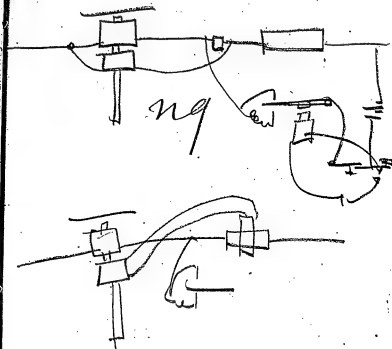
Phonograph

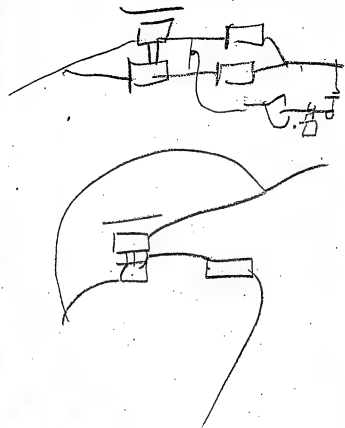
X has thick Copper Core
over iron Core

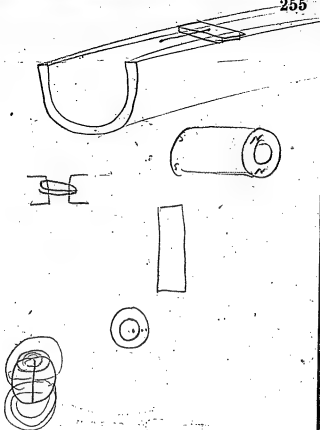
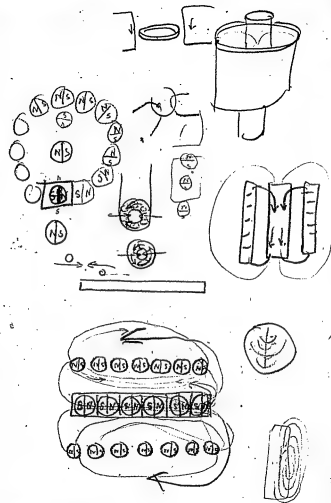


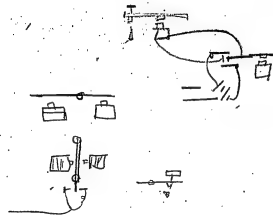
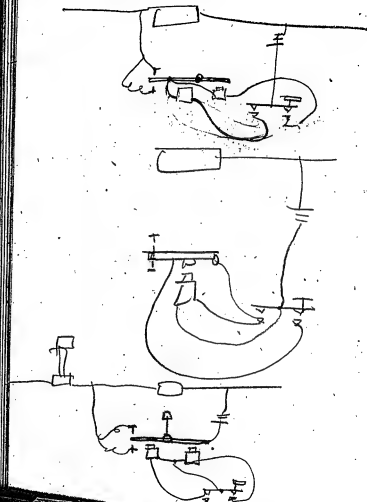


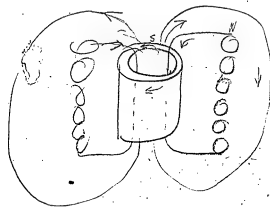
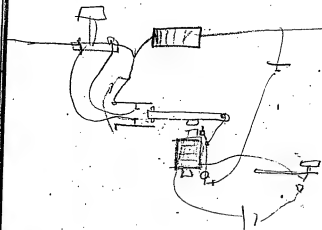
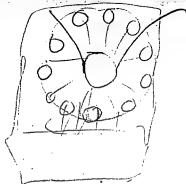
April 21 1886 Tae
Phonograph







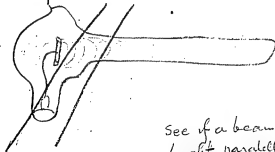




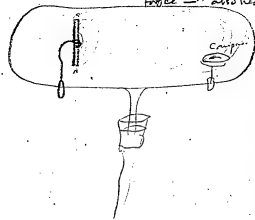
April 22 1886

X42

tar



See if a beam of
light - parallel to right
angles off by lines of
force - also heating chamber



The boast of heraldry of pomp and power
 All that beauty all that wealth ere you
 Alike await the inevitable

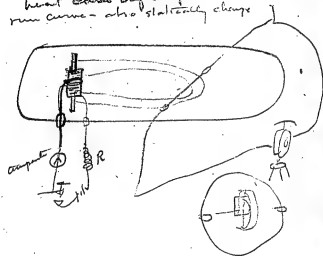
Lorenzo De Medici

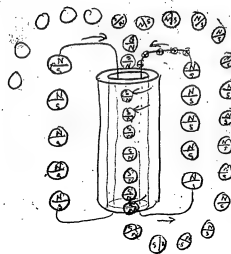
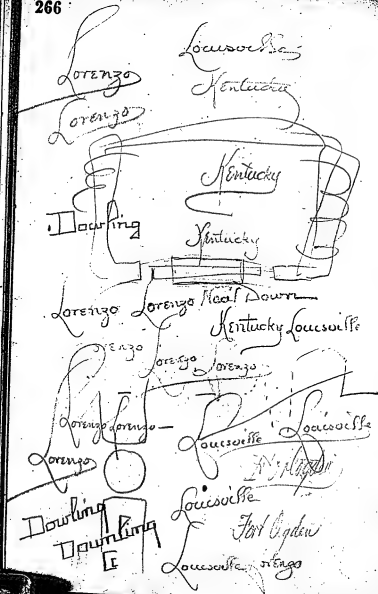
Chicago Milwaukee

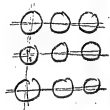
April 22 1886

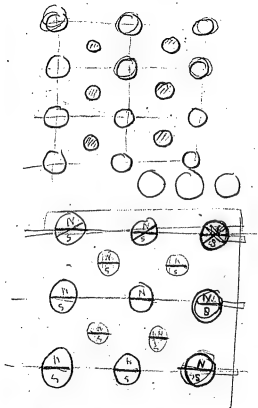
XYZ

Vacuum - run curve of EMF
 as Expansion proceeds also work
 Vacuum Light both directions
 heat cause dif compression
 run curve - also statically change



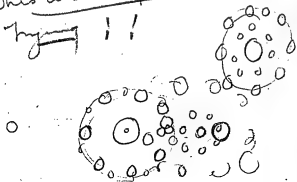


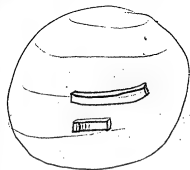


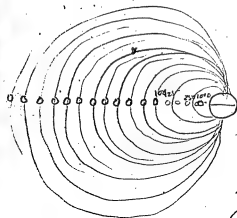


If steel is a compound of
Carbon Then when cast iron
is molten it should decompose
with a strong current. (10)
a current proportional to its
conductivity is greater than a
liquid, using ^{wrought} iron poles
the Carbon should go to one
pole & pure Iron to other,

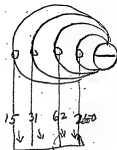
This is an Experiment worth
trying !!



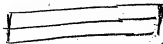




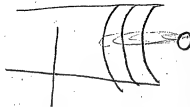
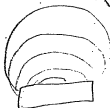
$$\begin{array}{r} 210 \\ 62 \\ 31 \\ 11 \\ \hline 4 \overline{) 858} \\ 84 \\ \hline \end{array}$$



1000
250
162
13



150



Fort Myers Notebook, N-86-08-17

This notebook covers the periods April 1886 and May 1887. There are also a few undated entries in between. All of the entries are by Edison. Many of them deal with the rotation of the earth and other planets around the sun and the resulting lines of magnetic force and electricity, which, Edison theorized, were responsible for gravity. There are also numerous entries relating to spectroscopy and to fundamental experiments on magnetic fields. Other notes and drawings concern the grasshopper telegraph, electric meters, arc lights, electric power distribution, pressure indicators, armature design, telephones, and the direct conversion of heat into electricity. Included also are notes about experiments to be performed at the new laboratory in Edison's lamp factory (see Lamp Factory Notebooks). One unlabeled set of drawings may pertain to ore separation. The first page contains the notation: "Fort Myers Florida Aug 17 1886 Ideas T A Edison." The book contains 288 numbered pages.

Blank pages not filmed: 128-129, 136-137, 142-143, 286-287.

Missing page numbers: 95-96, 103-122.

N-86-08-17

Fort Myers Florida

Aug 17 1886

Leas

J A Edison



April 18 1886 TAE

The rotation of the earth around the sun (which is an immense magnet or spherical mass with polarity one $\frac{1}{2}$ N other half S. Throwing out lines of force through space) cuts these lines of force so one side of the earth is N the other S but this does not produce a current but the rotation of the earth on its axis causes the circulation of a tremendous current around the earth in direction and parallel with the Equator clear up to the two poles which it creates, The mutual attraction of the lines of force of the Earth with its poles and the lines of force of the sun is at the present distance of the Earth from the sun just sufficient to

balance the tendency of the earth to go in a straight line, hence its orbit. - The lines of force emanating from the sun are electric as produced by the counter lines of force from bodies outside of our planetary system, hence the earth to always be in an exact balance between its tendency to proceed in a straight line & the attraction of the sun, must move in this electric orbit.

The rotation of the earth or rather oscillation of the earth to produce the seasons must be due to the fact that the sun oscillates.

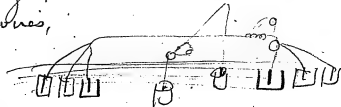
In the same manner -

Expt

To ascertain the strength of Electric
polarization of matter on the earth
subject to conduction in current
form. Take two wires each ^{500 feet} ~~2~~
mile long one east & west the
other north and South. No 0000.

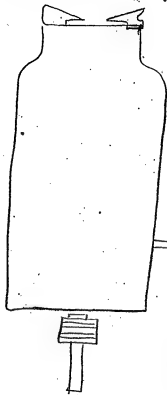
Sink ^{several} a large porous pot at
each end in good damp earth
fill with solution of Sulphate
zinc & use amalgamated electrode
zinc for ground plate -

Measure daily morning noon &
night. Current & Volts on both
wires,



April 18 1886 TAE

grasshopper



ascertain if by
Compression of air
the Column of air
which is in tune
with a certain
note can by increased
Compression respond
to higher note (Go as
you compress the column
may be shorter
air pump

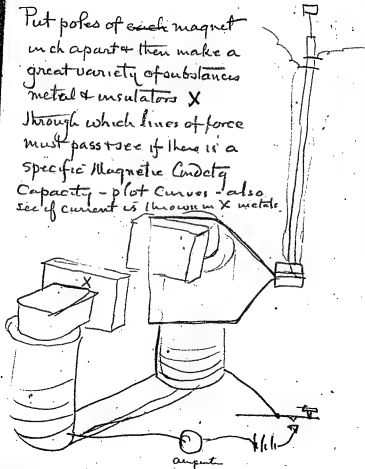
If above correct
Changes in Barometer
throws Resonators
out of order -
ditto velocity of sound
in air -

April 18 1886 Var

Fundamental Magnetic Experiment

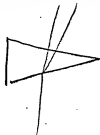
Put poles of each magnet
in contact & then make a
great variety of substances
metal & insulators X

Through which lines of force
must pass & see if there is a
specific Magnetic Conductg
Capacity - plot Curves - also
see if current is thrown in X metals



April 18 1886

XYZ



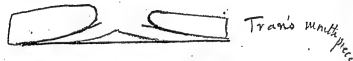
Spectrum - pass tubes filled with liquids also wires - parallel & at right angles to the beam of light. pass a beam of one kind of light through a tube lengthwise & move this parallel & at right angles to another beam of different colored light & also the spectrum & also white light - try these expts also in magnetic field both directions -

April 18 1886 TAE

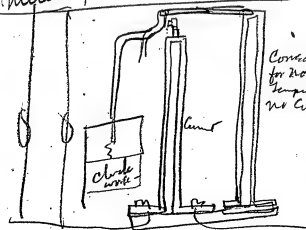
Make a jump spark spectrum also
flame spectrum of iron nickel
and other metals & then

The same in a powerful field
parallel & at right angles to
the L of F also in a partial
vac tube & thup between poles
in various directions of a
powerful magnet, also use
static from holz to change it in
vacuum,

April 18 1886 Jaz



Meter by Electric Heat Expansion

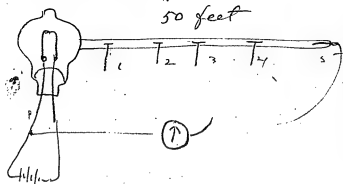


Connection
for Normal
Temperature
No Current

also put secondary coil
around X & see if
beam light - through alum
glass electric wave in
mercury gal - also heat

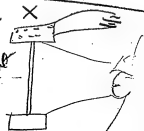


April 18 1886 rae



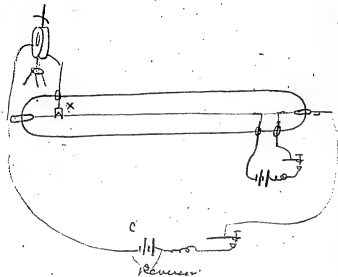
See if it will conduct in
straight line & get Res
every 10 feet —

Disc glass
Coated in Vacuum with
iron & deposits
was melted & flowed
Vase broken - see effects
magnesium light
through



April 18

Expt



Experiment to determine if heat conducted along a wire is hastened and retarded by electric currents to & fro. part of the wire is kept incandescent until by conduction heat reaches the thermo metal X when mirror Gal detects. Conduction time is ascertained with C off. Then with current P & then N from C also vary strength.

April 18 1886 -

Fundamental -

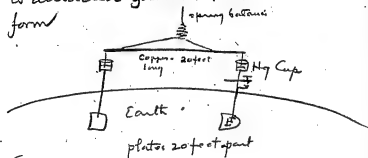
Theory that gravitation is due to the circulation of an electric current around the earth due to the rotation of the earth on its axis cutting the lines of force thrown out into space by the sun which is a magnet whose polar center line is parallel with that of our earth - The current circulates around the earth parallel with the equatorial belt clear to both poles
 (c) like the lines of latitude

The weight of all matter diminishes
 (c) electric attraction diminishes until we reach the center of the earth - matter insulated from the conducting crust of the earth is attracted by so called static attraction, hence the weight of such matter should diminish as we recede from the earth a pound of glass weighed by a spring balance

Make a filament about same as regular lamp but straight & 10 inches long $\frac{1}{2}$ dia - wind fine wire around outside primary & secondary - then heat fil with current, bal ^{side of} bridge the wire & use another tube same amount of wire on same size tube so as to get same self induction - Now when from white bal - then gradually lower temp by res in circuit & take throw of gal coil time - afterwards put from one side Nickel other & get curves -

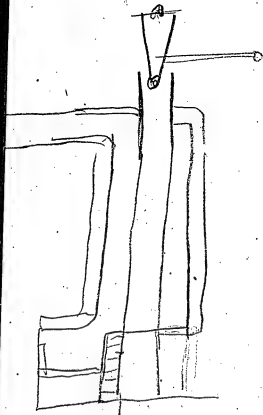
out the sea level showed weigh less on the same balance in a balloon 5 miles high.

Here is an experiment to determine if matter where the E has a current form is attracted greater than in static form

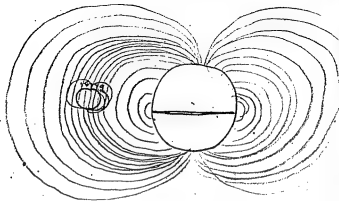


Test in New Lab -
Consider availability of Cobalt.
Nickel & Iron for heat effect
magnetism

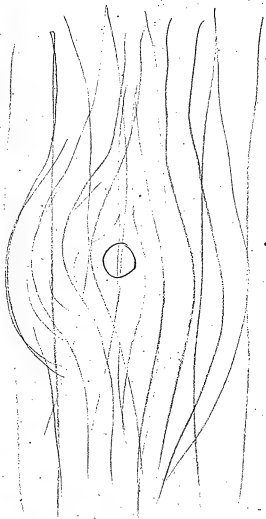




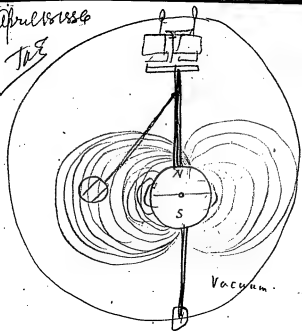
April 18 1886



The reason why the earth rotates on its axis while going around the sun is because the lines of force cutting the earth on its face nearest the sun are the strongest gradually weakening as you go farther out from the sun. The weakening of the line in 8000 miles is sufficient to produce rotation by mutual attraction between the strongest earth lines and the strongest sun lines. —



Apr 18 1886
TAE

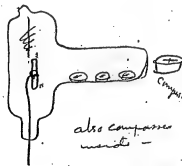
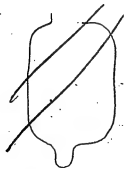


apparatus to prove the
theory

April 21 1888 -

Perhaps our solar system is rotating
as a whole and the sun rotating cuts
its own LF & thus the heat is accounted
for -

Find a needle

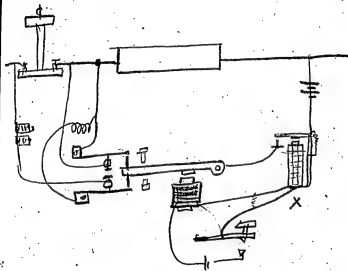


ascertain the strength of deflection in a
Compass needle 12 inches away from
a small $\frac{1}{2}$ size helipen pen may then
proceed to exhaust air & see if lines of
force spread out in vacuo watching for increase
deflection of needle as exhaustion proceeds

April 21 1886 TAE

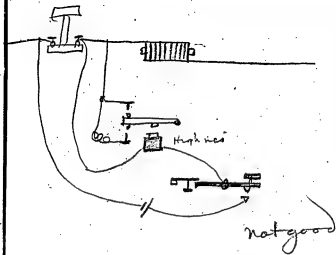
Phonoplex

To Silence phone when sending +
also save battery



X has Copper core around iron core.
Copper $\frac{1}{16}$ thick act very slightly

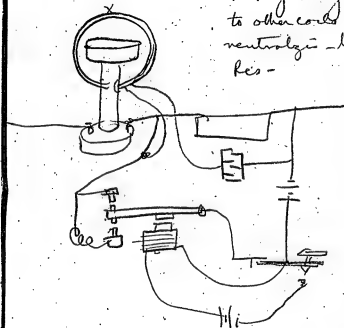
April 21 1886 TAE



April 21 1886

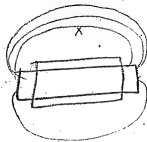
Phonograph

X Right angles
to other coils +
neutralize - low
res -



April 21 1886

Fundamental

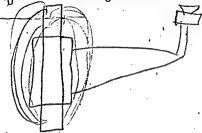


How are LFF conducted, can it be that
 the actual iron molecule goes round via
 x put in path of lines of force
 a gas flame to oxidize it and a
 wet sheet of Ferri also ferrous potassium
 also look through Spectroscope
 at Bunsen burner through which
 LFF pass see if get iron spectrum

April 21 1886 -

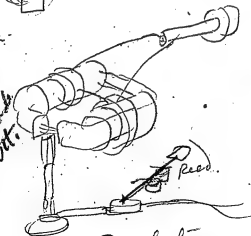
X42

Vibrate a flame in path of Lof tone
see if it affects it + gives sound - telephone



also galvanic

Dec 10 87
Ordinary music
4 galvanic



Reed vibrating

diaphragm gives

vibrations to charcoal

which gas passes through flame in path of Lof tone

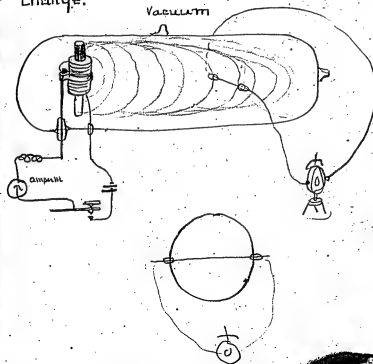
April 21 1886 -

Fundamental.

As Iron gives a jerk when heated
by Elec at about red heat and
expands & control & also loses its
magnetism or power to become
magnetic about same point & if
the reverse direction of current
in thermos at about same point
(ascertain). And other metals
don't, this shows that its
molecules or atoms are closer
together than other metals,
& therefore and have to be separated
by heat before they become like
the other. Conduction not subject
to magnetism, hence a slight
Electric current in iron makes
powerful attraction & scarcely more
in other metals. Perhaps
certain metals if cooled down
to 75 or 100 below zero & put in
a powerful coil would shed
magnetism. In

Use rotating disk
& Solid Carbonic acid &
ether.

Vacuum - Run curve of E.M.F. as
exhaustion proceeds - also work
beam of light both directions - heat
tube and run curve, also statically
change.



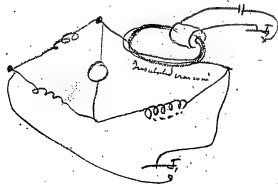
April 22 1886 -

It is probable that an electric current cannot get the atoms of non magnetic metals completely rotated so N & S are exactly opposite each other. They rotate with difficulty while the iron atoms rotate easily and when a piece of iron is

saturated the atoms are all opposite in polarity (N) (S) (N) (S) in copper even ^{by current heat} to the melting point they are only partially rotated

— (N) (S) — The effect of heat must be to rotate the atoms in the opposite direction as at red heat magnetism is lost, while electric conduction which can only take place by rotation is diminished by heat,

Independent now the question is
does iron become a better conductor
of E if magnetised. Try

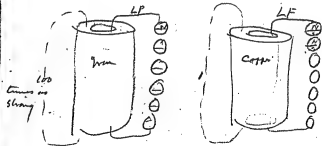


measure it magnetised & demagnetised -

if not there as iron outside of
its magnetism property acts to a
electric current like another metal.
then iron must be have a
Compound atomic arrangement
one system of atoms rotating
easily gives us magnetism while
the regular atomic system

to magnetism by the force of the current
 Causes it to act like another
 metal to E.

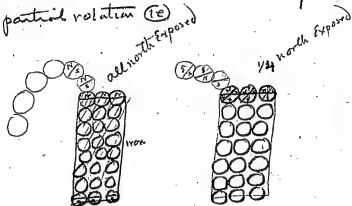
I must carefully investigate all
 the phenomena connected with
 the sudden jerk in red hot iron
 noticed by Barnett: see if it does
 it without current but by heat alone
 without Electricity.



It may be iron has no
 magnetic polarization in air
 hence it shows no galvanism

Hence the air seems conduct lines of force
 from iron several hundred times better
 than the same lines of force from Copper etc

This would seem to show that there was either a surface polarization of the Copper or the End atoms on Iron were rotated. Exactly north south with a given ~~same~~ current while with other metals there was only partial rotation (10)



If rotation of Copper atom was $\frac{1}{100}$ part of that of iron atom with given current. The polar pull or attraction at the Ends of Copper would be only $\frac{1}{100}$ part of that of Iron ~~when~~ because the total surface of active atom surface would only

$\frac{1}{2} \frac{1}{100}$ - Now very probably
is fully rotated when saturated.

If conduction is rapid oscillation of
atoms (from the great earth pole line
or internal attraction due to earth
cutting lines of force from the sun)
Then the amplitude is due to the
amperes, and rapidity to the number.
hence a one ampere cell will give
a current which will give a certain
amplitude of axial rotation say 100 M
in second, 2 cells added together &
still same current & twice resistance
will give ~~same~~ ^{same} amplitude
but twice the number (i.e.) 200 M
or what is probably more correct
Keep up the same amplitude in the
first ohm. The increased pressure
preventing a fall of amplitude
in the first ohm by the addition
of the second ohm.

April 22, 1885

TAE

If steel is a definite combination of carbon and iron, then when cast iron is molten, it should decompose with a strong current, say 1000 amperes per 3 square inch section.



good!

April 22 1886 TAE

Determine by the 39 inch pendulum
experiment apparatus if the saturation
curve in amperes is the same when
the poles are far apart or close together

$$\begin{array}{r} 40.0 \\ 25.0 \\ \hline 15.0 \end{array}$$

$$30$$

$$\begin{array}{r} 95 \\ 30 \\ \hline 125 \end{array}$$

$$\begin{array}{r} 14 \\ 11 \\ 6 \\ \hline 31 \end{array}$$

$$43$$

	Distance from Sun in Astr. Units	Period in Days	Eccentricity	Inclination of Orbit	Diameter in miles
Sun					888,000
Mercury	.3871	87	.2056	7° 6'	3089
Venus	.7233	224	.0068	3° 24'	7896
Earth	1.000	365	.0168		7896
Mars	1.5257	686	.0933	1° 51'	4070
Jupiter	5.2028	4332	.0482	1° 19'	92,164
Saturn	9.5478	10759	.0560	2° 29'	75,070
Uranus	19.1824	30686	.0466	0° 46'	36,216
Neptune	30.0363	60126	.0087	1° 47'	33,610

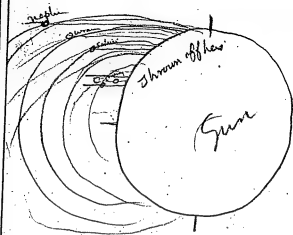
Dea Moon 2153

Inclination orbit 5° 9'

Distance in radii from Earth 59.9644

Sideral period 27^d 7^h

Synodic Revolution 29.12^h



Saturn 3 times slower bulk larger
 Mercury 1 ~~of the~~ slower 21 "
 Mars .26 slower 14 "
 Uranus 4.46 slower
 Neptune 5.46 slower

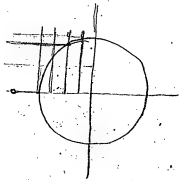
Saturn 99 times weaker lines of F
 90.56 larger in bulk
 9.5 greater dia
 9.5 " distance around orbit
 29.4 longer going round this orbit
 or 3 times slower than the earth's per year

Mercury

Lines of F 4 times stronger
~~4~~ 4 times nearer
 4 times less length of orbit
 4.1 less time going around orbit
 2.5 less diameter
 6.54 less bulk

Mars Lines of F 2.25 weaker

1.52 the distance
 1.94 " diameter
 1.62 longer orbit
 1.58 times longer going around
 3.7 the bulk



Uranus

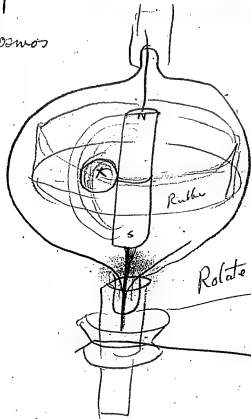
Lines of Force 360 times weaker
 84 times slower making the orbit
 19 " greater length of orbit
 or 4.46 slower per mile
 21.036 times greater bulk
 4.54 times the diameter

Neptune L.F. 909 times weaker.

18.11 times the bulk
 30 times the length of orbit
 5.46 times longer going a mile
 4.25 times the diameter

April 25 1886 TAE -

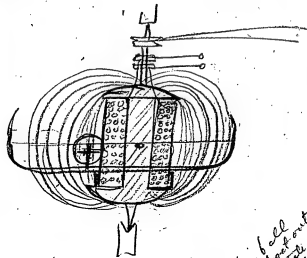
Cosmos



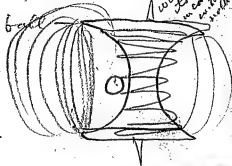
X Copper Ball.

April 25 - 1886 TAC

Cosmos



X Copper Ball

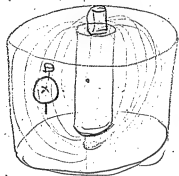


This ball
 can't get out
 will rotate on
 its axis in
 contact
 with
 nothing

April 25 1886

Tae

Comos.

Try variety Expts
with this

Copper just balanced in
Kerosene magnet.
rotated see if rotation on
its axis — also rotate
the jar & hold magnet still,

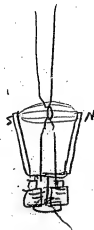
April 25 1886 TAE -

Make a lot of hollow balls $\frac{1}{2}$ inch
dia of Iron Lead Tin Zinc
other metals, balanced exactly
by themselves in Benzine also
water with salt in - Then

Throw in an Iron ball & several
Copper see if they arrange themselves
definitely - also cut water
with lines of force, pass
Current through with variety
balls in liquids - see if
any definition comes of
it,

April 25 1886 -

Newdodge
arc lights



+
Rotate the arc
& keep it in
center slope
flicking -

Good work at ap

Notes for Lamp Expts — June 18 1887
Tas

Ammonium Nitrite present in the breath, in large quantities after eating especially —
J Chem Soc Vol 25 - p 35

Rain water 2 milgm per litre Nitric acid.
+ ammonium Nitrite

Absolu Coconut charcoal See J Chem Soc
March 1870 — also Vol 25 - p
649 latter gives table of absolu
Cynogen + NH₃ at diff temps press
40 mm

Nitrous oxide decomp by Copper
spiral also iron —

Silver Reduced from Oxide by

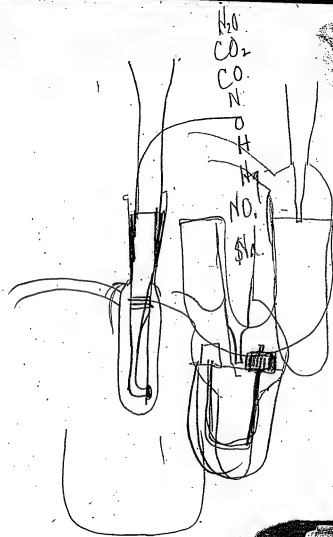
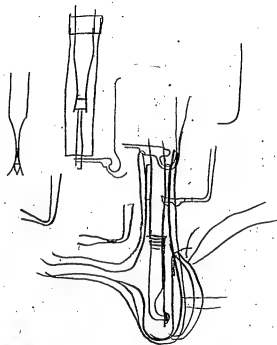
Hydrogen in Lamp obsabman

try Potassium amalgam —

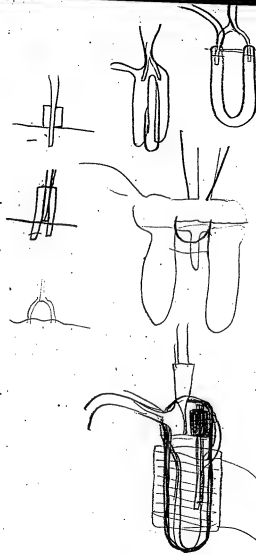
try Lead Reduced by H₂, for absolu
O hot —

Alcohol cleans glass
splendid -

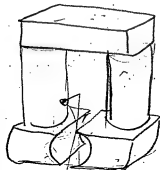
other cleaners Bisulphide Carbon
Cyanide potassium, Benzine,
Nitric acid - alkali hot,
Heat - This leaves porous
residue charcoal & salts,
hence better use alcohol remove
it, first hot water, then alcohol.



H₂O
CO₂
CO
N
O
H
H
NO.
Sta.



175 -

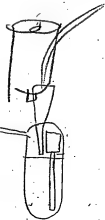
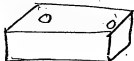
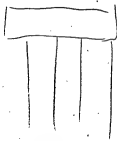
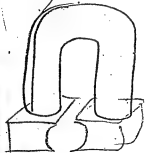


$$\begin{array}{r} 4000 \\ 16,000 \end{array}$$

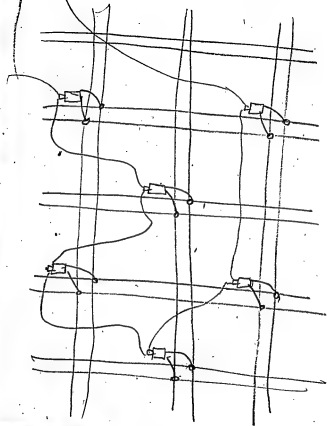
3

3.7/8 -

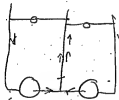
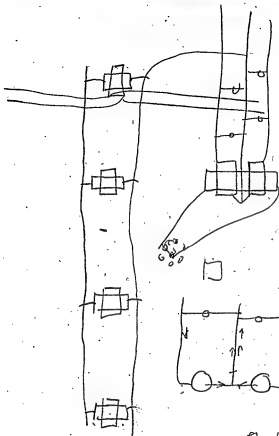
2 1/4 -



Patent

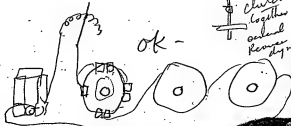


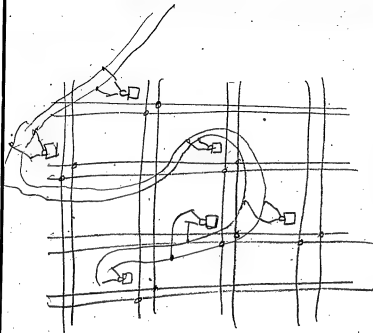
OK



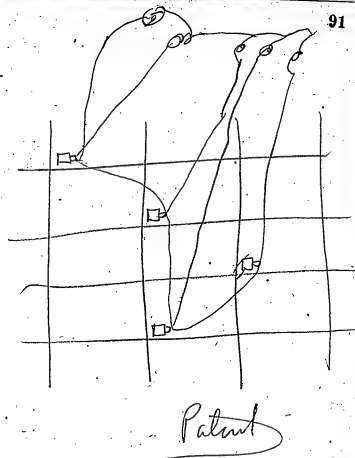
clutch together on road Reverse dry road

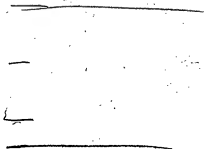
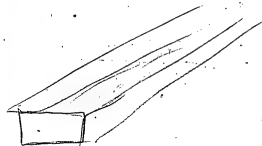
ok -

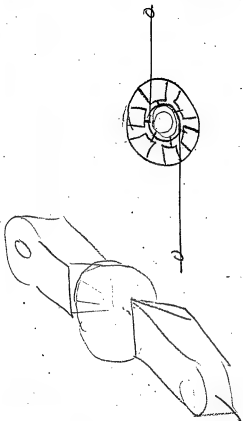




Patent







6

$$\frac{12}{16} \\ \frac{16}{28}$$

 $4\frac{1}{2}$ long

$$24 \overline{) 1800} (36 \\ \underline{84} \\ 160 \\ \underline{168} \\ 168$$

1

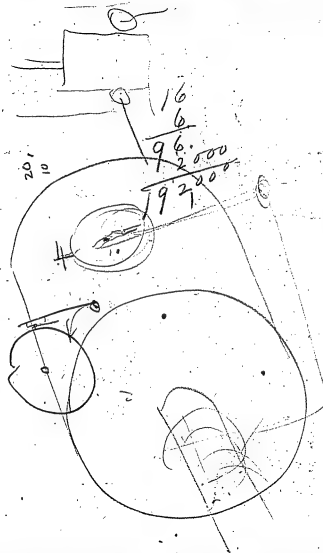
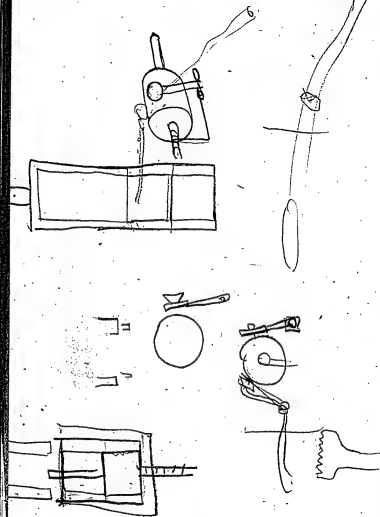
$$3 \overline{) 70} \\ \underline{60} \\ 10$$

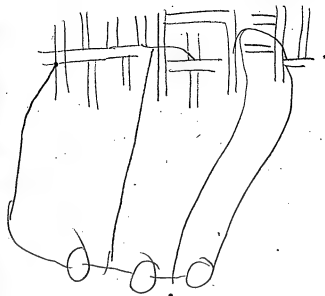


$$\frac{12}{108} \\ \frac{90}{108}$$

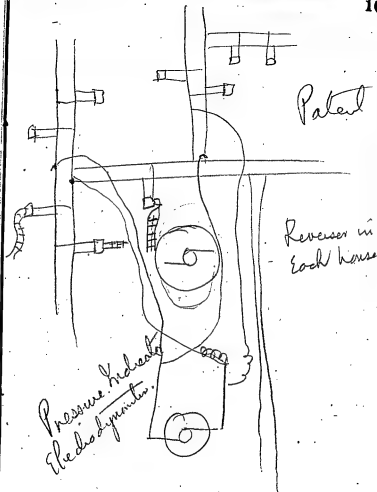
2000

19.200





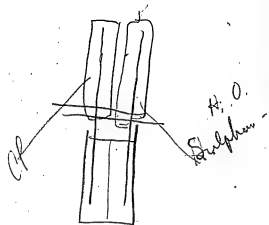
1000, 2000,



Patent

Reverser in
each house

Pressure Indicator
Electrodynamometer



25

15

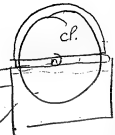
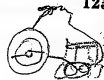
30

50

H.C.P.

H.C.P.

H.C.P.



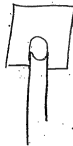
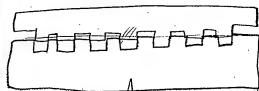
772
 231 30000
 60000

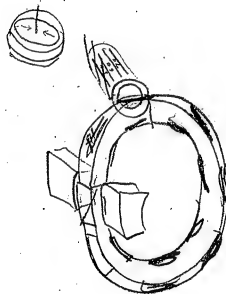
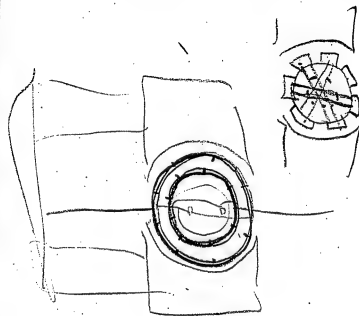


Soluble peroxide
 Lead

11-
 22 hp 1 hour
 2 lb H₂ O₂ 1 lb H₂ O.
 Redman Lead

504





$$\begin{array}{r} 350 \\ 80 \\ \hline 28000 \end{array}$$

$$\begin{array}{r} 350 \\ 36 \\ \hline 2100 \\ 1050 \\ \hline 12600 \end{array}$$

Vails Lamp-

Content ~~Surface~~ - 8x10 80, 3.50 long, 280, cm.
 Surface: 36 1260.
 50 Volts, 70 ohms res, 16cp-

New Lamp:

Content: 50. — 100 ohms 260
 Surface, — 5.2 inch long 1248
 (approx.) Content 28 7/8 long — 1960
 Surface: 7 long 1260

50:

$$\begin{array}{r} 2850 \\ 92 \\ \hline 257.6 \end{array}$$

$$\begin{array}{r} 252 \\ 28,08 \\ \hline 28,08 \end{array}$$

280.

5.2

$$\begin{array}{r} 18. \\ 92 \\ 36 \\ \hline 162 \\ 456 \end{array}$$

$$\begin{array}{r} 24 \\ 53 \\ 72 \\ \hline 120 \\ 272 \end{array}$$

$$\begin{array}{r} 280 \\ 70 \\ \hline 19600 \end{array}$$

$$\begin{array}{r} 196 \\ 39200 \\ \hline 39200 \end{array}$$

18

196

$$\begin{array}{r} 28 \\ 168 \\ \hline 28 \end{array}$$

$$\begin{array}{r} 28 \\ 168 \\ \hline 28 \end{array}$$

$$\begin{array}{r} 28 \\ 168 \\ \hline 28 \end{array}$$

$$\begin{array}{r} 28 \\ 168 \\ \hline 28 \end{array}$$

$$\begin{array}{r} 28 \\ 168 \\ \hline 28 \end{array}$$

$$\begin{array}{r} 28 \\ 168 \\ \hline 28 \end{array}$$

$$\begin{array}{r} 28 \\ 168 \\ \hline 28 \end{array}$$

120

$$\begin{array}{r} 120 \\ 368 \\ \hline 7360 \\ 368 \\ \hline 44160 \\ 196 \\ \hline 722 \\ 544 \\ \hline 1340 \\ 1176 \\ \hline 1640 \end{array}$$

8

1358

$$\begin{array}{r} 1358 \\ 10800 \end{array}$$

107

$$\begin{array}{r} 107 \\ 675 \\ \hline 535 \\ 642 \\ \hline 7225 \end{array}$$

42

$$\begin{array}{r} 120 \\ 928 \\ \hline 2060 \\ 3360 \end{array}$$

441.

3.68

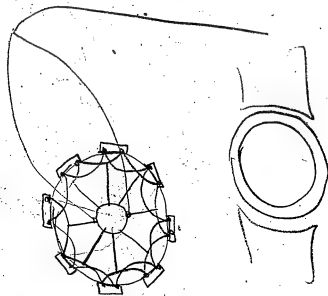
722, Continued
 2835 - Surface
 Res 120 alin

42

$$\begin{array}{r} 675200 \\ 42 \\ \hline 13520 \\ 27000 \\ \hline 28350 \end{array}$$

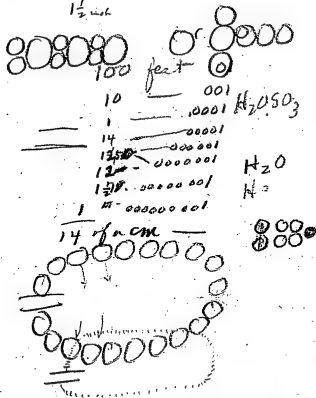
722/248

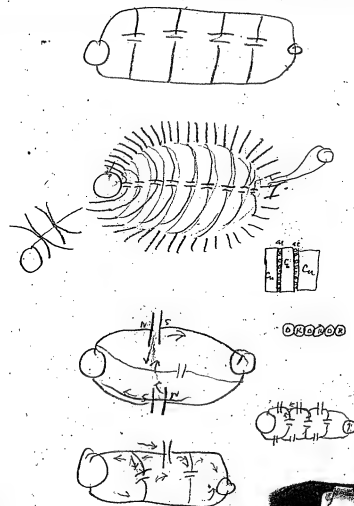
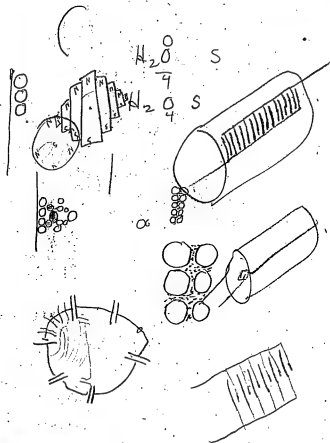
$$\begin{array}{r} 722 \\ 520 \\ \hline 2020 \\ 2480 \end{array}$$

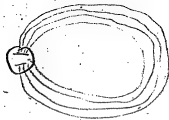
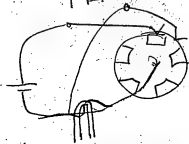
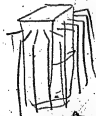
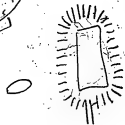


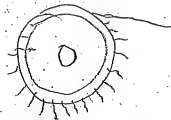
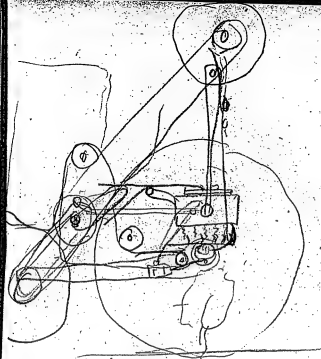
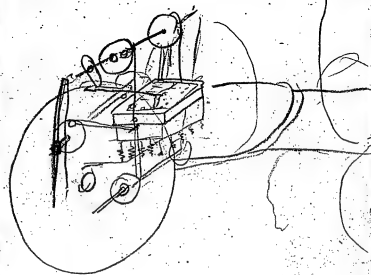
100 000001.

1

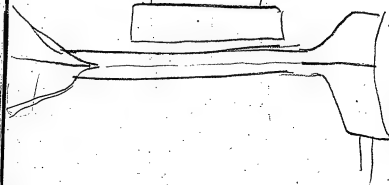
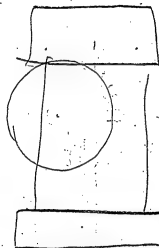
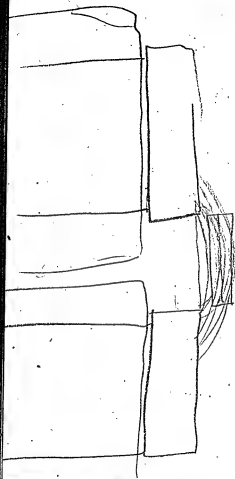
 $1\frac{1}{2}$ inch

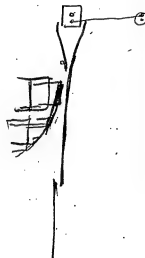
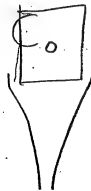
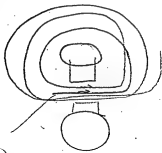
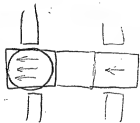
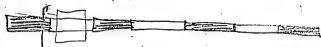


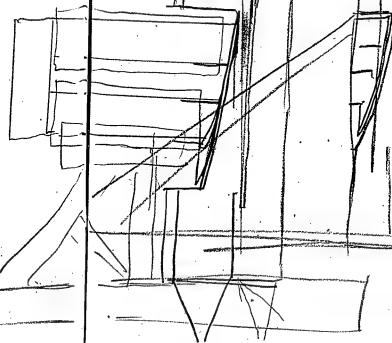
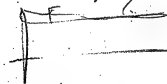
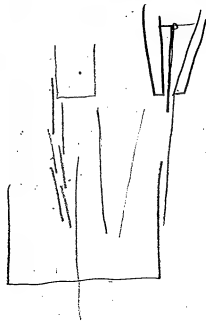


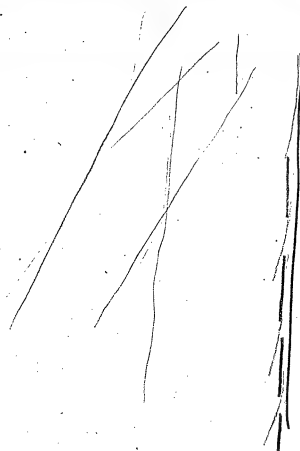


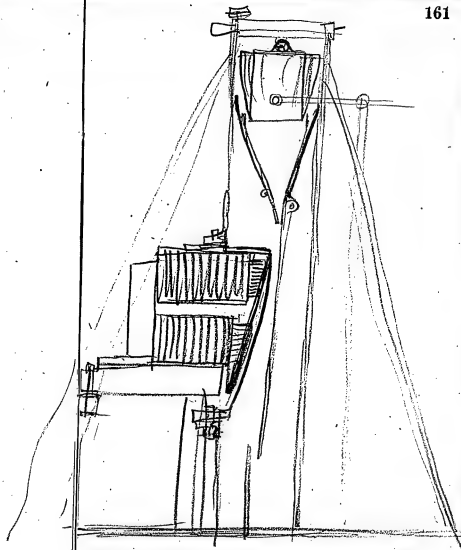
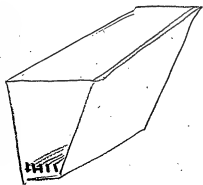


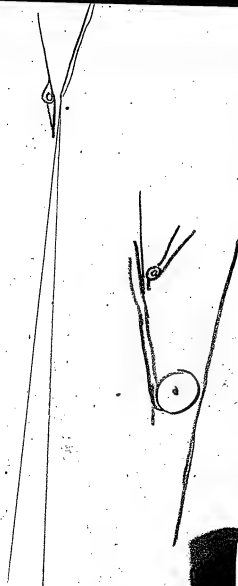
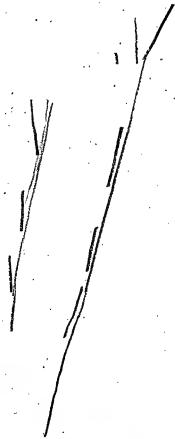


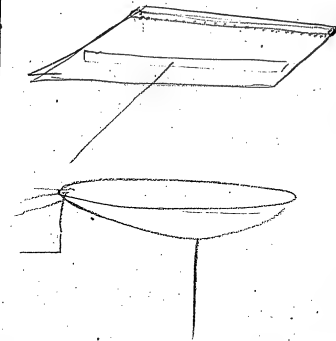
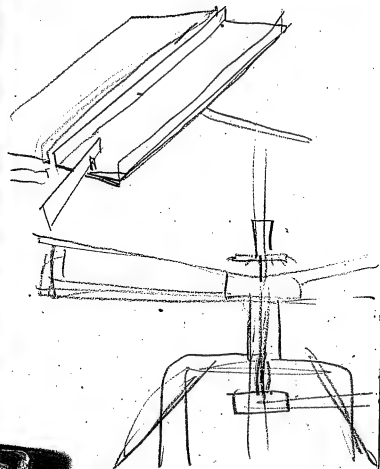


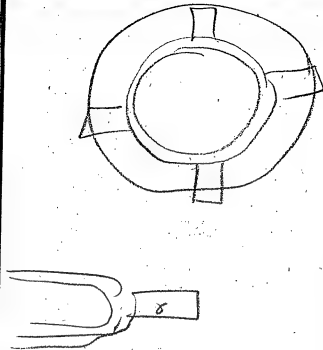
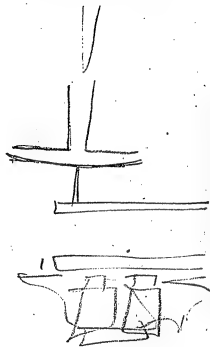


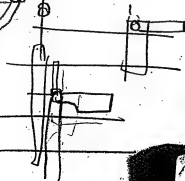
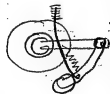
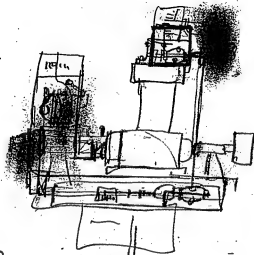
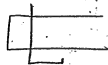
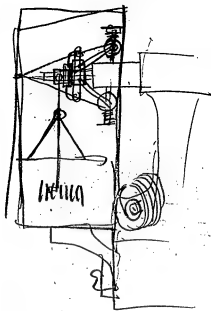


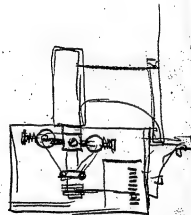


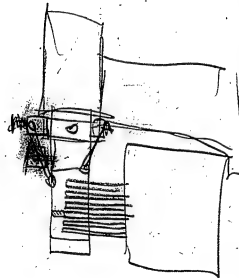
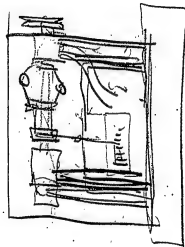


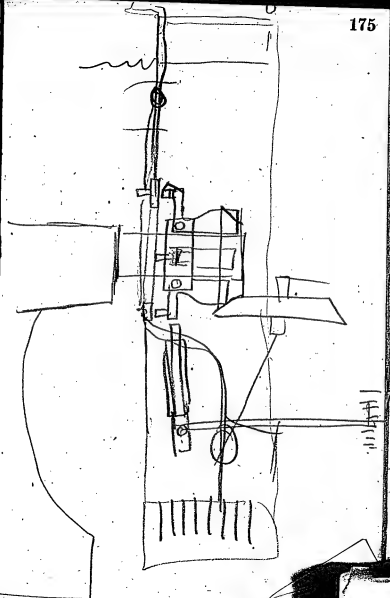
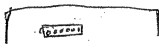


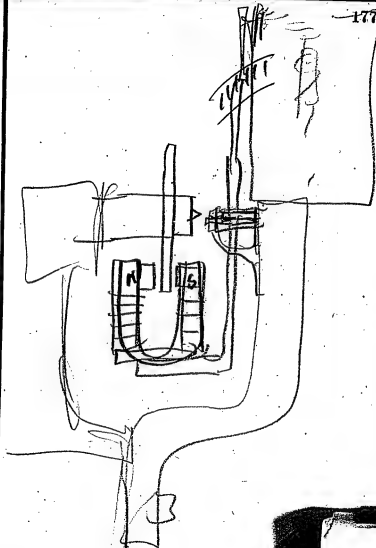


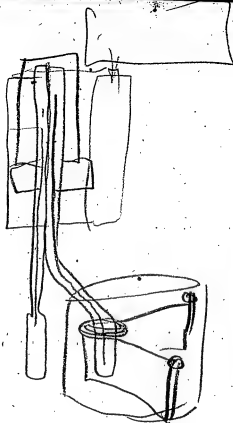
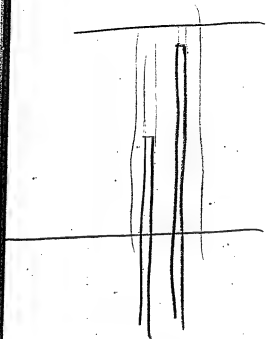


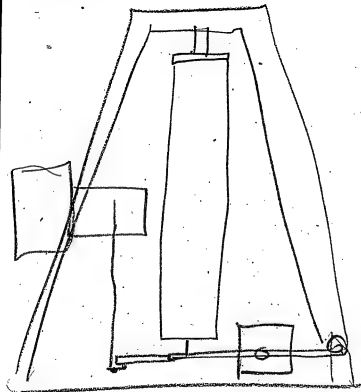


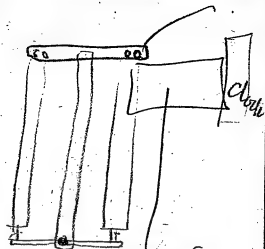
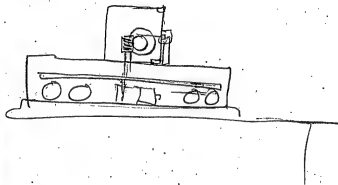




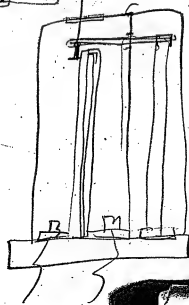








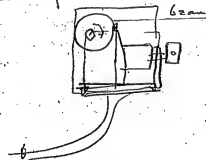
Water by
Electric heat
Exposure



Experiments New Laboratory -

Running phone motor EMG relay on top for
repeating WU Tel -

Probable surface of chalk affected by
light - use diaphragm with mirror
& heliostat, & condensing reflector or
off lens make very narrow streak light
talk & turn EMG - if beam alters
Copulantly for instant talking to heard
probably it only for instant like
Electricity.



if works put in Alum Cell stop all
heat & any light - then try Ultra
Violet or Actinic rays only -

Expts New Labaralve
 Light effects chlorine ^{+H} close
 a tube with Rubber diaphragm
 with heating tube & chlorine & H
 in proportion to form HCl - with or
 without Water to absorb HCl which
 it does explosively - perhaps saturated
 Cl Water & free Cl with H ok -
 let beam light end on Erlen
 tube - vibrated from Mirror on
 diaphragm - helioslat +
 sun light -

Hozion apparatus Silent
 dischg for forming synthetically
 subs on Corneli scale with
 Res current max or high volt
 dynamos + silent dischg
 tube - Multiple arc

$$\begin{array}{r}
 800 \text{ Lamp. 1 mil. } 12000 \\
 1600 \quad \quad \quad 24000 \\
 \hline
 1600 \quad 2 \text{ mil. } 5. \quad 96000 \\
 \quad \quad 1265 \\
 \quad \quad \underline{300} \\
 \quad \quad 1565 \quad 100 \quad 1.40 \\
 \quad \quad \quad 200 \quad 70. \\
 \quad \quad \quad 400 \quad 35. \\
 \quad \quad \quad 800 \quad 1.72
 \end{array}$$

$$\begin{array}{r}
 3000. \\
 12000.
 \end{array}$$

$$\begin{array}{r}
 33750 \\
 \underline{168750} \\
 337500 \\
 \underline{412656} \\
 4 \quad 12656
 \end{array}$$

75.
10
5.
75
25
40.
6.
10.
3

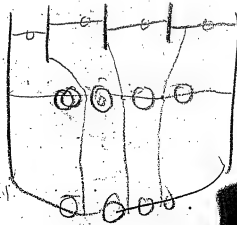
$$800 \times 800 - 4 = 24000$$

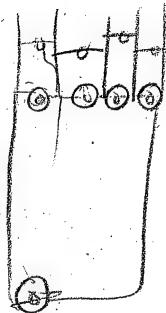
$$400 \times 4 \times 4 \times 41.$$

$$16 / 96000 (6000)$$

$$200$$

$$6000$$





May 1 1887
TAE

Dissolve or rather mix as much
pure Alumina ^{also Magnesia}
~~with~~ with Asphalt Solution
possible - dip preliminary ^{Carbon & Carbon}
Carbon in solution, so surface when
Carbonized will be partially of
as a non conducting infusible oxide
make a order number 15 going to clamp dept

102 ~~102~~ ¹⁰²
In Sugar solution dissolving much
this will take up dip
filaments - also make a
strong acetate of Magnesia -
lime Alumina to solution nearly
saturated ^{+ Syrupy} then dissolve
all the Sugar it will take
up & in the solution dip
up ^{also carbons} in Carbonization
filaments this will give a Carbon-
Magnesian Surface - make
2/5 of each kind

Electric Lamp Expts Cont'd 195

May 1 1884

Tue

Pack some new stock filaments
in powdered asphalt run up
to as high as possible say 600 fohr
take out while hot + pour. it out getting
filaments out + dis. along off
asphalt - then dip in regular
asphalt solution + reprecinnings
also Linsed oil - Ent. Filaments
also Linsed oil loaded with
asphalt.

Dip preincubated fibres prelimi-
to 500 @ 600 in melted
asphalt ~~not~~ at 600 @ 700
fibre - try melted sugar

Arrange to duplicate 234
in our new process but putting
film under strain -

Duplicate ~~is~~ a good new stock
curve but using Carbon instead
of metal boxes - Martin

Run some new stock through
with powdered fusible metal
securing film so they
won't float when metal melts.
Hamilton

Put a pine stick in metal tube
which stick has been soaked in <sup>90%
set</sup>
Saturated solution Tannic acid
put some tannic acid in balloon
bring up quickly in floor of pump
room

Tri Bromide Benzene
 melts 198° Boils at red heat
 Finishes metal
 4 Bi. - 1 Cadmium - 2 Lead 1 Tin -
~~700°~~
 4 Bi. - 1 Cd 2 Pb 1 Sn -

Antimony Trichloride
 melts 73° Boils 230 at
 pressure at mos a 160 in
 vac -

Stannous chl melts 249 -
 boils 617 -

Living Expts - May 1 1887 Jar



also put pine stick in tube with
 Red oxide mercury in bottom
 to give off oxygen - (John Att)

preliminary fibres in following
 liquids as high as possible -

Melted Rosin - Anthracene,

Chrysene - mp 27° C Hexabromizingine

mp 300 C Hexachloroethane,

~~at~~ C₂Cl₆ - mp 182 C The

Chlorine Haloids may produce beneficial

Chemical reaction Hexachlorobenzene.

mp - 222 C Try flow Sulphur

to preliminary in melts 113 C Boils
 447 C

Lamp Expts -

201

May 1 1887.

7 a.m.

preliminary in glycerine,
Olive oil, Sugar alone -
powdered fine - phenol

187°C boiling pt,

Boil some fully carbonized felicit
Secured in reg form in Sulphur
acid out doors until they
Gend - then take out + run
Curva - take some strip in
asphalt sal + run through
whole of reg process -
Marshall

Lamp Expts

203

May 1 1887

put some rego Carbons in string ^{T. H.}
 water & SO_4 sal put current on
 & oxidize the surface until very
 black - also put in ~~strong~~ nitric
 acid do same some soft
 more than others & longer -
 then treat with asphalt
 after they have been heated
 & washed to get acid out
 object is to remove the oil
 scale - Payne

Take lot Carbons & pass them
 through flame so they are
 partially oxidized treat
 with asphalt

Electric Lamp Expts. 205
May 1 1887
Jae

Take req Carbon mounted on
inside part. dip in Asphalt
solution 24 hours seal in
Lamp & then gradually bring
ful up in Vac while pump
running to Carbonyl Asphalt
surface. slotting each time
to permit gas to be evacuated
Make 6 in this manner
get curve -
Marshall

Lamp Expts

May 1, 1887

207

ascertain on a reg set up at 80
 The increase of Resistance every
 hour until busted. Then
 take another and put at 80
 selecting one of same economy &
 volts & insert Res equal each
 time to increase on the one
 burning. A see what Cp will
 come to don't burn the standard
 only during test with Res -
 object is to see how much
 decrease - Cp is due to
 increase of resistance -

Marshall

Kamp Expt. May 1 1887 Tar 209

Melt some Zinc ~~and~~ get
it red hot plunge secured fibres
in it. also try Copper
molten in ~~the~~ white hot.

Run Curves also a curve after
being treated with asphalt
some through reg process -
Payne

Carbons ⑩ prelunges some
filaments in aqua regia
weak -

Hamill
also in Melted Sulphide Pat.

Lamp Expts -
May 1 1884
Tag

Put lamp on pump with
stop Cock under Hg -
get Vac & work lamp regular
then close cock & let it
burn at say 80 c p near
as possible for 2 hours keep
pump running - then turn
Cock & see if gas has
accumulated - Marshall

Try passing current through
orig filament & second to
inside part dipping in
dipped Mallett asphalt
also sugar Payne

Lamp Expts May 1. 1887, 215

Float on surface of asphalt
 & also sugar solution
 baths, best Electrotype plumb,

1 ~~also an~~ ~~thick~~, quite thick
 so that when solution goes
 down it will leave a

surface of plumbago - you
 can do this in a small experimental bath
 that will do ^{3rd carbons at a time}
 also dust over film

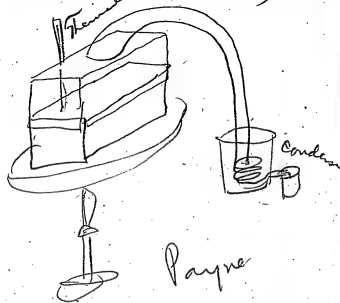
when fresh from bath plumbago
 = powdery salt

also try finest Magnesian oxide
 alumina etc, this will

give good reflecting surface
 make order of 15 each kind
 W. H. Martin



Lamp Sept 1. 1889 217.
Have box made iron tag

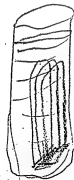


put i.e.s in forms ~~up~~ second
full with blg & prelungi-
various speed Condensing
blg - Sand bath

Lamp Expts.

May 2 1887 ²¹⁹

Preliminary in wood tar in
 sealed glass tube wood tar
 being same nature as that
 from fibre I suppose a
Thermometer can be sealed
 in tube - the end should be
 drawn fine so air can be
 let out easy -



fusible metal
 fibres will be
 kept separated
 & also have a
 tension on them
 in Carbonizing

Payne

thousand and they will do what is
wished of them you should
be wise.

Journal

[Handwritten signature]

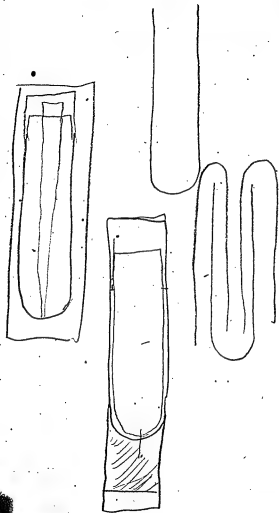
Warning
Don't

Washington

Worming

Hand
Wormholes

It is probable that with wood ²²¹
tar in sealed tubes and 10.
hours run or less that 800
deg. fahr. can be reached &
that there will be no more tar
left in filament to make a
crust on surface to cause
strain & cracks. It is also
doubtful if they will crack
first this will be an evidence
there is little Rupert drop
action on surface. —



Order No. for Hamilton



223

melted
in oil

Sealed tube - Wood Tar. Therman in 600
 hours reaching -

ditto: quickly as possible - a bunch of
 new sticks ~~8~~ round - about 100 in
 bundles, weighted with say 100 lbs to hold in solution

Same as above only powdered Rosin in tube
 which melts.

Same as above ~~Antimony~~ flowers sulphur

ditto. finely powdered sugar &

" phenol.

" Linseed oil.

" glycerine,

" Mercury

" Linseed loaded with asphalt

" powdered Asphalt,

" powdered Sulphur & potassium

" aniline oil

9/50

acetic acid.

Saturated Sol Sugar.

Paraffine,

Iodoform.

2 pt sol of Caustic Potash
Sul Acid -

2 "

pure water,

Chlorine Water - Saturated.
Pentachloride phos 1 pt sol

M Force taken Hamilton order was
25 are dipped ^{in 62 sugar solution} through picking to
goos in carbon boxes. with ~~the~~ carbon laid in
anthracite 10 mesh but to of per 50 mesh
Canal Coal on bottom. Then given to
Lawson to run through his final test
not picking instead of $4\frac{1}{2}$ mesh
a now make equivalent to $5\frac{1}{2}$
mesh to get 100. parts,

25 are to be run to goos without dipping
25 " " put in Lawson frame in
regular manner ~~at~~ ^{as previously being}
dipped in 62 - 25 to be saved

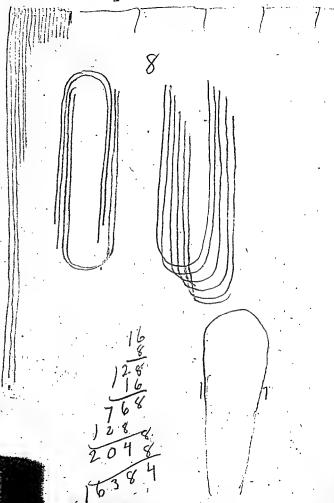
45/16. $\frac{16}{32} \frac{450}{128} (2.8$ $\frac{2.8}{1000} \frac{1}{1000}$
 $\frac{15}{16} \frac{24}{21} \frac{60}{32} \frac{64}{24} \frac{78}{468} \frac{780}{3120}$
 $\frac{15}{24} \frac{16-4.5}{5.5} \frac{45/160}{258} \frac{50-Cont'd R}{64 Cont'd Sg-}$
 24. 50 28 surface 60 vol 449 Cont'd
 Round 24-50 Cont'd. $\frac{355}{5} \frac{550}{355} \frac{15}{1950} \frac{17.75}{100}$

Then run through pump room as many
 as possible of the 25. afterwards
 what comes out ~~is better~~ all are to
 be tested for spots etc holes made
 about number but otherwise infer
 4-10 of best are to be selected
 for curve 10 order number.

Marshall take 30 lamps
 Regulars but with new clamps
 10 are to be run up on pump in
 regular way but ~~now as high as~~
~~or highest~~ with exception that instead
 of running peg up as high as it
 will stand to run peg up little
 less than they do on regulars
 The next 10 are to be run up
 just as high as it is possible to
 go without arcing or melting clamp
 The remaining 10 are to be run
 up as high as possible and in
 addition are to be allowed to burn
~~over~~ 10 minutes or so at 100
 100 C and 100 C.

The object of the experiment is to consolidate the carbon on the pump and prevent ~~the change~~ that portion of the drop in candle power due to increase of resistance. ~~It~~ which appears to take place in the first 2 or 3 hours at 80 candles. I think that bringing the filament up much higher than usual which with new clamp is probably possible + holding the peg there for some time that the fil will have the change taken out of it so when it goes to photometer room it will get a reading which will not change much after

you will probably find that
 arcing will destroy some
 of your lamps so you
 better ~~stop~~ keep making putting
 lamps in pumps until
 you get the requisite 10
 for a curve keeping account
 of the number broken & how
 broken it took to get the
 10 - you will select Reg
 16. C.P. lamps for this
 test. with the shank broken
 off & deposited by new process
 to inside wires - If you
 find that arcing bothers you
 too much you can stop
 it but putting about
 100 ohms resistance



in circuit when you have the peg at the highest, the arc ~~resistance~~ springs with greater difficulty - when there is a resistance in circuit somewhat near that of the lamp - It is probable that the deposit at the clamp should be somewhat thicker than would be necessary with the present way of working as a magnet will attract an arc & have a strong impression that it would be difficult to spring

an arc if one of the magnets
 using on pump in Laboratory
 were used + powerfully
 energized - perhaps you better
 use my pump for the 54 pumps
 as they have magnets already
 on -

The great point is to
 bring the filament up on
 the pumps far higher than
 is now usual in fact the
 highest attainable limit
 that is practicable with the
 use of every device to prevent
 arcing -

These 3 sets of lamps
 should then be set up

at ~~the~~ 80 candles each
 and the drop in candle power
 taken every hour accurately
 this will give us the value of
 any. of bringing them up
 high in pumps & it may
 also effect their life for
 good or bad - End Marshall

Deshler Howell

5 Regular lamps to be
 put up at 80 candles
 a reading of candle
 power to be taken every
 hour & the change in resistance
 of the filament taken
accurately every hour

The object of the experiment is to ascertain what proportion of the drop in candle power is due to a change in the mere resistance of the filament - by using a fresh lamp & putting in circuit ~~a~~ varying resistance. The fall in cp from resistance. Can I suppose be ascertained. I suppose 5 lamps will be sufficient to give a correct result,

Experiment No 2.

Select 5 bulbs
 which have been blackened
 They should be of various
 shades from a slight
 blackening to a very
 much blackened one -
 have Holzer carefully
 remove the inside part +
 broken Carbon, then taken
 from a Regular lamp
 which has been test
 for Volt Cp + amperes
 the inside part + Carbon
 + seal this in the

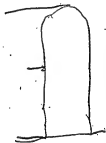
floccated bulb - ~~run~~
 tell him to be careful
 Not to heat the bulb
 up where light comes through
 as the wires removed
 some of the floccation
 the have them reexhausted
 + not run up very high
 on pump but just enough
 to get air out. then
~~you can~~ set them up
 at same volts ~~as~~ &
 get cp - The object of
 the experiment is to determine
 what proportion of the

drap of Cp is due to
 blackening - These
 lamps should after you
 are through testing
 be mounted on a board
 + the loss on each plate
 marked + kept in your
 museum for further reference
 by looking at the tint
 of a Gull + comparing
 one can pretty accurately
 determine the loss of
 Cp by the blackening

Which will be useful
in future Experimenting
if you don't think 5
bulbs enough select
such a number as will
give us an argument octave
End Howell

Martin Force -

25 fibres of each Kind 8
round of the different Kinds
of stock sent me by Payne
including Reg new stock maygrove
& Hamilton, are to be sent
round the hat binder in
packed in about 40 mesh
anthracite in Carbon boxes -
and these are to be given

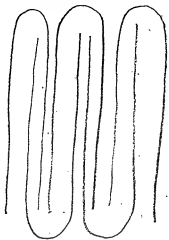


Lawson to be run through
the full process after receiving
them from him they are to
be secured to ~~clamps~~ inside
wires by deposit each
filmment is to be cut
2 inches long after it is
fully carbonized thus



Each is to have an order
number ~~above~~ ^{out of}
those of each order number
that gets through pump

room select 10 for
 a curve but have
 accounts kept of number
 of filaments that are
 good that comes out of
 the Carbonizing boxes
 number broken in depositing
 ditto pump room an
 important element to
 determine Value of a new
 fibre is the breakage as
 well as the life - These
 filaments are not to be
 treated in any manner



but just run through in
 the old way this will
 determine their value
 independent of any
 treatment, I suppose
 you could string them on
 your paper sieve pins
 for convenience & thus get
 the 25 in two boxes,
 these boxes should all
 be mixed & placed in
 various parts of Lausens
 should ~~be~~

Hamilton.

You are to try the following Experiments all of which will require several weeks time & very careful manipulation otherwise they will not be of very much value. The Experiments are the bringing up bamboo filaments quickly & also gradually in liquids etc in sealed glass tubes thick enough to withstand the pressure which will ensue from a temperature of 600 deg fahr. - These glass tubes should be about $\frac{1}{8}$ of inch thick & $1\frac{1}{2}$ to 2 inches in diameter

Closed at one end by fusion
 like a test tube. the other end
 should be open to permit the
 insertion of the filaments -
~~off about~~ which must be
 secured in Carbon or metal
 receptacle so filament do not
 touch sides of glass tube
 & so they will not float to top
 in the liquid or when a solid
 or powdered form becomes a
 liquid - enough material
 should be used to cover the
 filaments entirely when the
 tube is at angle of say
 30 degs -

~~The end~~ after the liquid or
 powder etc is put in tube +
 everything ready ~~the end~~
 it is to be taken into gas
 force & sealed the end being
 drawn out to a point so
 that when the experiment is
 finished the tip can be broken
 off to allow of the escape of
 the gases slowly - then the
 tube is to be cracked at
 point where it has full diameter
 the filaments taken out
 and soaked in a warm
solvent of the material

un

used for instance if asphalt
was the material used then
The filaments can be washed in
considerable quantity of
Benzol slightly warmed on
sand bath of linseed oil
a large quantity of
Turpentine will dilute it
" so that filaments when taken
out will have practically
no linseed oil on them &
the turpentine will evaporate
if sugar then water
will dissolve it - always
use a considerable quantity
of water or other solvent
to wash the filaments

a chamber should be
 used which will hold
 say B ~~tubes~~ to 6 tubes
 & heated by a gas stove
 or other means, a Fahr
 Thermometer should enter
 the chamber the bulb being
 amid the tubes so it will
 get same heat as they do
 the Column should appear
 outside the chamber when
 mercury stands at 100 deg
 the Thermometer should be $\frac{7}{8}$
 capable of indicating up
 to 600 degrees a very long
 one is not necessary one about
 12 inches long is sufficient

& are not so expensive.
 The chamber should be arranged
 so that the temperature can^{ed}
 be regulated very nicely
~~deg~~ so that starting at
 100 fahr it will go gradually
 up to 600 deg in 8 hours
 also be able to go to
 600 inside of one hour
 as I desire to make some
 experiments rapid & slow -
 should the tube explode
 the chamber will prevent
 the ~~glass~~ broken glass
 from coming in contact with
 the eyes. —

The carbons to be used
 are regular $8 \times 13 \frac{1}{2}$ -
 with the shanks on same as
 now. about 25 ~~pieces~~ ^{films} to
 should be put in each tube
 except in the case where you
 put regular forms in then
 3 can be put in each form
 & 3 forms used. making
 9 carbons. You can get
 instructions from me as to
 best method of putting
 the films together for
 placing in the tube

after washing & drying the
 felaminis they are to be
 placed in the little paper
 boxes with the Number
 marked on the box & also on
 a slip in the box - Each
~~box also~~ Experiment should be
 given a number, Thus
 Hamilton Experiment NO 1 -
 Variation NO 6

The tube Experiments being
 Called NO 1 Experiment.
 & Each tube a Variation
 with a Number -

~~There~~

There will be duplicate tubes in every experiment one of the tube containing the same material as the other will be gradually run up in temperature from the temperature of the atmosphere to 600 degrees Fahrenheit gradually during 8 hours -

While the other tube contains which is a duplicate will be run up to 600 degrees in one hour or as near that as possible

~~you should be~~

I shall require about
~~20~~ 30 pairs of tubes
~~all of~~ of which will be
 1½ inch diameter inside
 measurement & thick -

Have Mr Holger order it
 immediately so as to have it
 by time your furnace is
 ready - He will obtain for you
 a Thermometer anything
 relating to making furnace
 speaks to me & I will
 have made -

all of the paper boxes containing
order numbers are to be
delivered to me -

The following are the materials
to be placed in the tubes.
please see if we have them all if not make
list so they can be ordered immediately

No 1 - Boiled Linseed Oil -

No 2 - Pure undiluted glycerine

No 3 - Mercury -

No 4 - Phenol (10) Carbolic acid

No 5 - Paraffine

No 6 - Wood Tar

No 7 - Powdered Rosin 60 mesh

There should be enough powder
put in tube so that when
it melts it will cover

the filmlets fully

No 8 - acetic acid glacial.

No 9 - 50 ^{parts by weight} ~~percent~~ of asphalt
dissolved in 50 parts by
weight of linseed oil -

No 10 powdered asphalt 60
mesh

No 11. Aniline oil -

No 12 powdered sugar this
is sold in grocery under
name of pulverized sugar
& is very fine -

No 13 50 part by weight
of sugar + 50 parts water

- 14 pure water
- 15 Saturated Chlorine water
- 16 - ~~3~~ 5 percent solution of
Caustic Potash in Water
- 17 5 percent solution of
Sulphuric acid in Water
- 18 - Iodoform -
- 19 - ~~Flour~~ Flour of Sulphur
- 20 powdered fusible metal
10 @ 20 mesh
Formula 4 parts Bismuth
1 part Cadmium 2 parts
of Lead 1 part of Tin

These are previously fused
together & then powdered
I think it is brittle if not
you can cut it up it
melts about 175 Fahr -
See that we have a supply
of material sufficient to
make 4 or 5 times the
quantity needed

21 - Trichloride of Antimony

22 - Anthracene

23 powdered sulphide of Potassium

~~20~~
24 - 5 percent solution of Chromic
acid in water

25 - 5 percent solution
of Nitric acid - 283

26 - Water 93 parts Caustic Potash
5 parts pyrogallie acid
2 parts

27. Chloride of lime fresh
20 parts Water 80
parts

28. Water 90 parts Hydrofluoric
acid 10 parts - be very careful
in handling the Hydrofluoric
acid not to get any on your
fingers or body it makes ulcers
but after dilution with
water it is not dangerous

I will probably give you
other solutions in addition
before the end of the experiment

Σ



LAMP FACTORY NOTEBOOKS, 1886

These notebooks cover the period June-December 1886 and contain notes, drawings, and calculations relating to experiments performed at Edison's lamp factory in Harrison, New Jersey. Most of the entries are by Edison and John F. Ott. One book contains entries by Mina Edison. Another book was used primarily by Ezra T. Gilliland and consists of notes and drawings pertaining to telephones, phonographs, and a railway telegraph and telephone, along with drawings by Ott for a village system generator. All of the other books relate to lamp experiments, but one of the books also includes drawings of Edison's phonoplex.

The books appear on the microfilm in the following order:

1. N-86-06-28 (1886)
2. N-86-07-07 (1886)
3. N-86-08-03 (1886)
4. N-86-08-24 (1886)
5. N-86-08-25 (1886)
6. N-86-10-05 (1886)
7. N-86-10-08 (1886)

Lamp Factory Notebook, N-36-06-28

This notebook covers the period June-September 1886. All of the entries are by Edison. The name of John F. Ott appears frequently as a witness. The book contains notes, drawings, and calculations relating to lamp experiments. The lamps are numbered 1 through 18 and 159 through 222. Loose pages containing the results of lamp tests have been pasted onto many of the notebook pages. The spine is labeled "35." The pages are unnumbered, and the book has been used in both directions. Approximately 200 pages have been used. Some pages have been torn out of the book.

$$\begin{array}{r} 24- \\ 600 \\ \hline 14400 \end{array}$$

$$\begin{array}{r} 32 \\ 600 \\ \hline 19200 \end{array}$$

$$\begin{array}{r} 24. \\ 675- \\ 24 \\ \hline 2700 \\ 1350 \\ \hline 16200 \end{array}$$



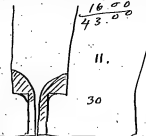
$$\begin{array}{r} 675- \\ 27 \\ \hline 4725- \\ 1350 \\ \hline 18225- \end{array}$$

157.

$$\begin{array}{r} 10 \quad 30 - \quad 1350 \\ 2700 \\ \hline 1600 \\ \hline 4300 \end{array}$$

$$\begin{array}{r} 675- \\ 43 \\ \hline 2025- \\ 2700 \\ \hline 271025- \end{array}$$

$$\begin{array}{r} 1350 \\ 10800 \end{array}$$



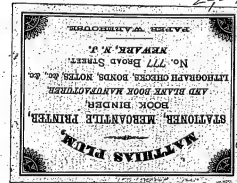
11.

30

33

$$\begin{array}{r} 675- \\ 33 \\ \hline 2025- \\ 2025- \\ \hline 22275- \end{array}$$

$$\begin{array}{r} 11 \\ 11 \\ \hline 12 \end{array}$$



$$\begin{array}{r} 33 \\ 700 \\ \hline 23100 \end{array}$$

24.

11

$$\begin{array}{r} 19/ \quad 16.00 \\ 15 \quad 2 \\ \hline 80 \\ 76 \end{array}$$

175.

$$\begin{array}{r} 100 \\ 84 \\ \hline 16 \end{array}$$

$$\begin{array}{r} 157 \\ 16 \\ \hline 906 \\ 151 \\ \hline 2411 \end{array}$$

June 28 1886.

Expts on Lamps

- exp. No 1 Gasolene washed 480 m
- 2 Alcohol + KO - broken acc.
- 3 " " 115 min
- 4 Nitric then rinsed Alcohol 90 m
- 5 - Hot Bi. Chrom K + SO₄ Rinsed H₂O 5 m
- 6 HCl then alcohol
- 7 Alcohol twice, hot,
- 8 Bisulphide Gas only
- 9 Soaked 1/2 hr alcohol clean
clamps scarce, any air come
off lamp or pump

No 10 Alcohol afterward Bisulphide

No 11 Alcohol then bulb heated
Continuously by Kerosen Lamp
while in pump

from 152 at 76 cp. 398 at 80
June 28 - listed 195 rather block

Cp 80-90-82-80-72-64-65-62 60 56-54-52-50-48-46-44-42-40-38-36-34-32-30-28-26-24-22-20-18-16-14-12-10-8-6-4-2-0

NO 12 - Lamp washed alcohol. then run
off with Kerosene Lamp under it -
gave spectrum H, Very strong H γ
+ faint CO or CO $_2$ -

177 on scale shows very strong violet
line, this I thought was always a
CO line ~~60~~. 125 being the strongest
CO line but this 177 is 3 times
as strong as 125 in this lamp
hence it must be due to something
else. The spark g. has only flat
points 2 lines at 130 + 131 -

Barker says 177 is H line

NO 11 - at 16 Cp - 155 - Cp hp - 418 at
80 Cp - drop in Cp - ~~80~~ 84
40-65-60^m 64 80^m 52 100^m
~~50~~ - 51. 120^m 47

Quite block. Lasted 135 min

No 10 - Bisulphide C + first
Alcohol -

149 c per hp at 16. 398 at 80 -

Loaded 365 min Moderately

block -

1st hour 2 3rd 4 5
drop 80 - 72 64 55 - 48 44

6th 40 c power -

No 13. no alcohol Heated by Kerosene
Lamp - Fused KO. in bulk -

Spectrum Strong mercury - Line 177

Sodium line, ^{fairly} Trace of Red H line

Line $106\frac{1}{2}$ - no signs of CO -

Arcd at 40 min - didn't vary in

Cp - Economy 152 at 16 411 at 80

133 $\frac{1}{2}$

160 -

101

115

96

93 $\frac{3}{4}$

91 $\frac{1}{4}$

86 $\frac{1}{2}$

138

156

10
8

91 93 96

No. 12 Blackening on glass absorbed
gases so couldn't get a spark
after heating lamp. Vac Low -
H brilliant, CO moderate Hg
Very strong. Sodium moderate.

14 - Phos anhy + K. Lamp nothing in
lamp heated Kerosene lamp -
K melted got air out finally.
Kept low heat absorb CO,
sealed lamp off cold being cold
5 min previously hot both
lamp + filament gave plenty
Hg = after cooling lamp
+ slightly heating K. no Hg -
Couldn't get a spark through
sealed off spark gap
set lamp up for curve - heated
gap - got no Hg - but very
strong H - also Amco 133 $\frac{1}{2}$ 160

101 113- 96 93 $\frac{3}{4}$ 91 $\frac{1}{4}$ 86 $\frac{1}{2}$

158 156 -

NO 14 (asle) 80 m - 151 c per hp
406 at 80

80c	20mm	40m	60	80
88	-	74	65	62cp -

Rather block -

NO 15 Exhausted with Kerosene Lamp
not heated on Vac - sealed off and
set up -

NO 16 - $\frac{1}{500,000}$ of atmosphere, lots
mercury - also CO faint Hydrogen
moderate + N. fooled with it
inapparent arcs due to sparks being
on when Lamp lighted - Vac
got so perfect couldnt pass
spark at first, heated & made

map out arcs thru knocked vac down
slightly saw H, Hg + CO - afterward
by absorption of glass or clamps got
so high couldn't get spark through
Sent it to get curve main reports
taken. 120 volts to get 16 candle.
67 ampere, haven't balls nuffts set
at 80 -

20

17 another lamp not heated by Kero or fil.
Current, absorption K + Charcoal
in tube, heated filament after
sealing - Knock vacuum down
& charcoal after laying
all night didn't appear to
absorb - Hydrogen + Nitrogen
strong pink in clamps -
CO very faint NO Hg - Sept 4 up
for curve -

18

Iodine in Lamp with Copper
 Hg₂ - to absorb it & prevent going
 in ~~bulb~~ pump - arc'd 7st
 min 161 cphp at 16 438 at
 80. 80^{20 min} 82^{40 min} 68^{60 min} 60
 whitish deposit gCob at first

17 Iodine in bulb -

Lasled 60 min - 168 cphp
 at 16 - 462 at 50.

80^{20 min} 78^{40 min} 70 - whitish
 iridescent deposit near clamps.

122 - intensity 12 - sharp

108.5 " 9 "

114.5 " 8, slowly increasing

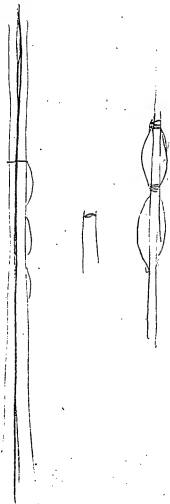
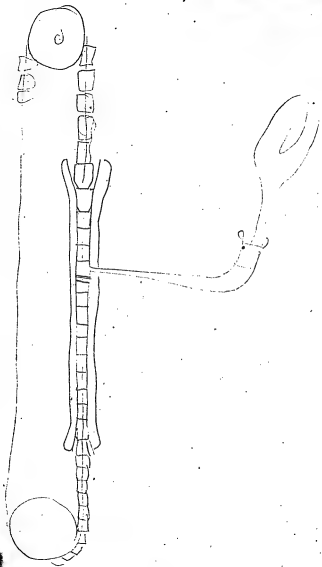
fluted spec nitrogen ↗

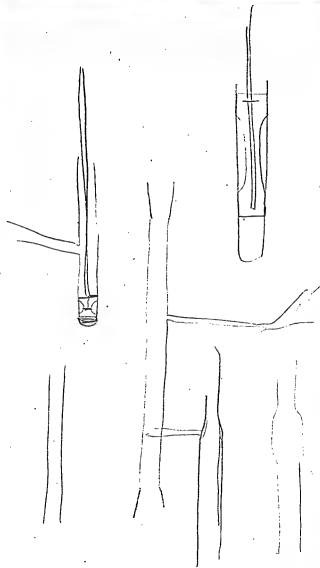
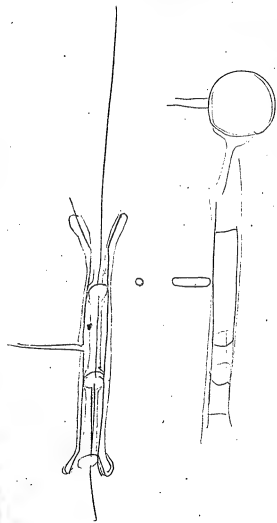
CO strong

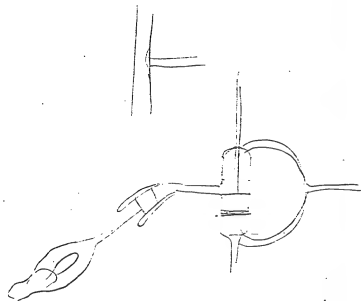
122 gradually disappears

H line thin

New pump







83 $\frac{1}{2}$ - H.

142 $\frac{3}{10}$ H.

179 $\frac{9}{10}$ H.

125 $\frac{8}{10}$ - Carbonic acid CO_2

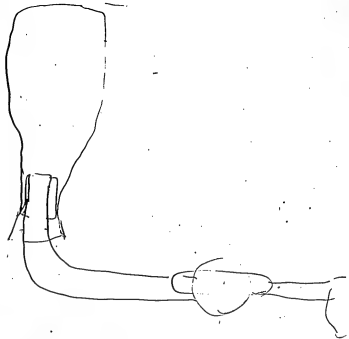
109 $\frac{7}{10}$ - CO_2

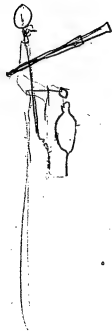
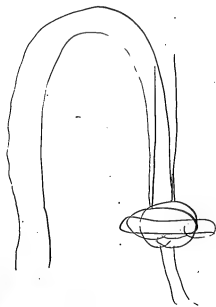
95 - CO_2

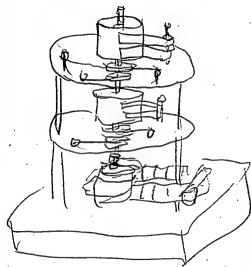
A spectrum of a tube taken off of a washed Hydrogen pump. No spark having passed through it. Another gauge on the same pump which had sparks pass through it several hours, showed no carbonic acid. This shows that carbonic acid or organic matter was either on the magnesium electrodes or on the glass.

These readings were gotten by making the slit for each line very fine, reading from the left-hand edge and focusing both

the scale and telescope for
each line. The width of the line
I have called $\frac{2}{10}$ of a degree.





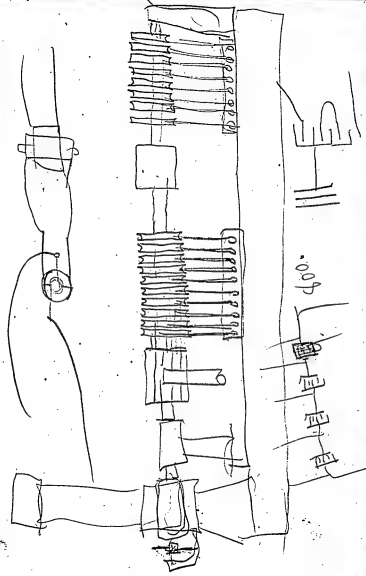


30

$$\begin{array}{r} 18020000 \\ 3 \overline{) 5406000} \\ \underline{5100000} \\ 306000 \end{array}$$

$$\begin{array}{r} 800 - 1550 / 1080 \\ \underline{600} \\ 200 \\ 740 \\ \underline{600} \\ 140 \end{array}$$

180.



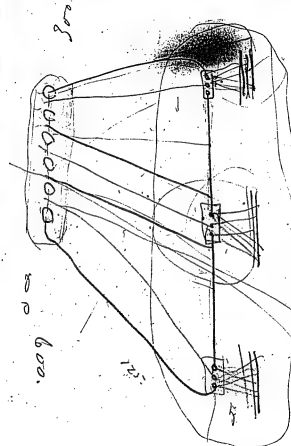
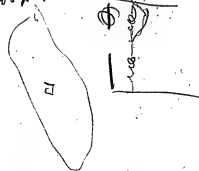
$$15000 \times 15000 \times 5000$$

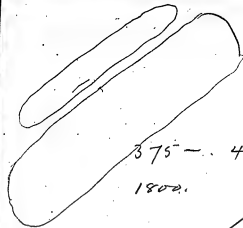
$$\frac{15000 \times 15000 \times 5000}{10000 \times 10000 \times 10000}$$

$$\begin{array}{r} 220 \\ 400 \\ 3 \overline{) 90000} \\ 9 \overline{) 30000} \\ 3333 \end{array}$$

$$\begin{array}{r} 13333 \\ 1 \overline{) 13333} \end{array}$$

$$k = \frac{Q.P. \times D}{100000 \times V} \text{ for main system}$$



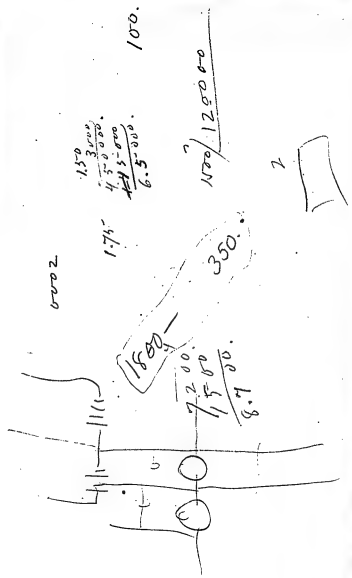
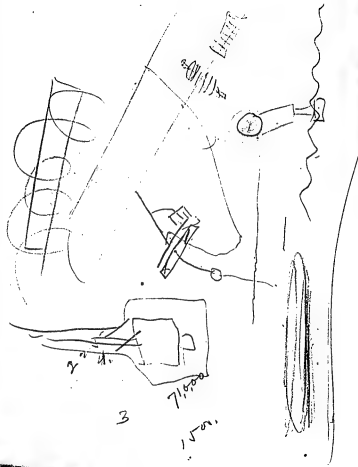


375 - 400

1800.

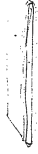
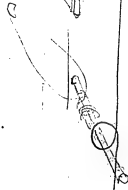
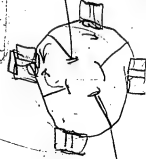
1800.







500.
800



3000;



50.

85 140—

3

3rd

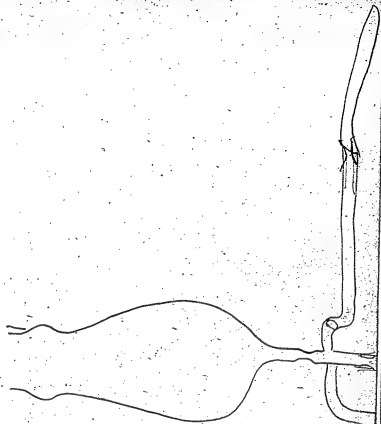


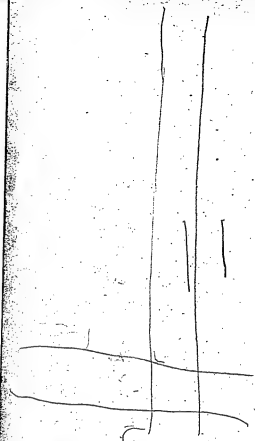
3rd 3000—

41

XE-172

N-86-06-28





J. S. M.
oil - glycerine; - pump Hot - use paraffine;

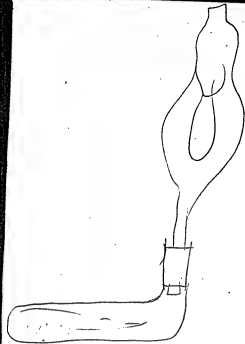
Isoline; to attack Hg + Antimony or Bismuth
to absorb -

Iron spiral metallic spiral. iron pref'd -
Kept Hot by Current or combustion.
tube containing iron or metal or
material which heated decomposes
water & produces a solid oxide -

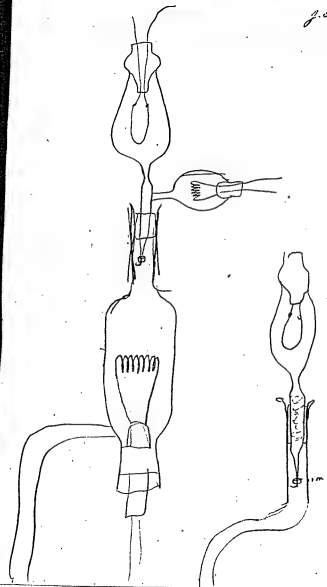
Use extra iron filament in
lamp which is to be heated
by Current after vacuum obtained
while lamp hot by kerosene lamp
afterwards raising same to melting
point & breaking it & drawing
it down by magnet,

straightening filaments,

J. F. 1185



J.F.M.



Aug 10 1886 - J F M

Made 6 lamps with
telephone lampblack which
is good conductor, an extra
platinum wire passes in lamp
& lays inside lamp down
where it is sealed - The lampblack
lays on bulb the lamp being
inclined it is heated by
kerosene lamp to drive off
gases & decompose Hydrocarbon
& eliminate water - after
lamp sealed off the lampblack
is shaken down to bottom of
globe where it comes in contact
with the extra platinum wire
lamp is then set up at 80 c
the extra platinum wire is
connected to positive & some
lamps are connected to

Aug 10 1886 Tue J. O. W.

Negative wire outside lamp
tests show that when wire
connected to positive life is
longer. it may be that when
connected to negative it
has a bad effect on filament
& the reason why lamps
last longer on p is there
is no effect, I have also
made several lamps
with carbonyzed Anthracite
Coal powder. This gives off
scarcely any gas & doesn't
dirty the lamp bulb -
The p wire to Carbon powder
gives best results, I notice
that the blackening material

Aug 10 1886 J. S. Webb
of stopping short at clamps.
Extends clear down below
clamps to surface of the
anthracite, - ~~BB~~

I am trying putting a
Coating of glacial phos.
acid on inside globe &
connecting it to the wire
that is near the seal so the
potential of the globe
will be the same as the
Clamp -

159

Aug 10, 1886 J. F. M.

Unwashed Undried

powdered anthracite in
 side tubes extra wire
 leading into inside part
 Anthracite heated with
 Kerosene lamp worked
 regular way reversed
 Current, worked anthracite
 in bottom of globe after
 sealing off lamp
 Then sealed side tubes off -
 put shing clamp on globe
 Clean -

160

Aug 10 1886

J. S. Ditt

Same as 159

fil shing globe + clamps

161. Aug 10 1886 rec
J.S.M.H.

Same as 159

polishing globe + clamps

Clean

162. Aug 10 1886 -
J. S. Webb

Same as 159 except there
is 3 times as much
anthracite, so it will
nearly touch wires as
they come into vacuum -

ful shiny clamps +
globe clean -

163 Unwashed + undried
J. S. M. 6

Powdered glacial phosphoric
acid put in globe little
water put in - put on drier
& dried hot, then allowed
Cool - put on pump worked
regular way -
clamps & globe clean
flushing -

Aug 10 1886 - 125
164 - Unwashed J. F. H. B.

powdered gloccal phosphoric
acid a little water in globe
to make conducting surface

Extra wire into vacuum
down at seal - put on
drier & heated, cooled &
then put on pump heated
with kerosene - Current
revised - fil shiny
globe little whitish.
Clamps clean -

to leave its wire connected
offers to 163 - peculiarity
is that inside part little yellowish
globe near clamps.

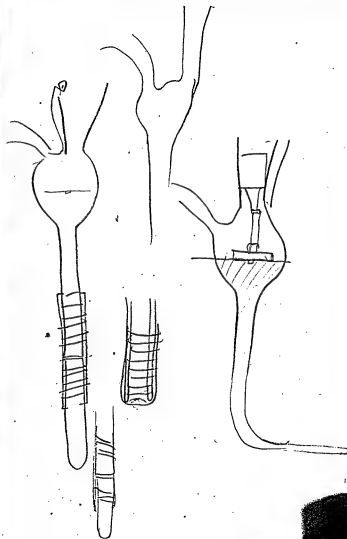
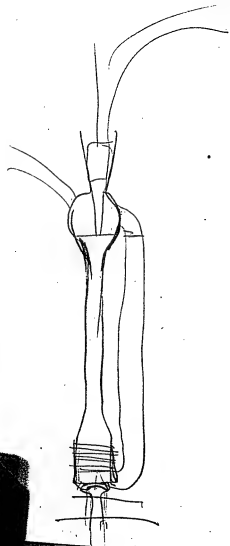
165 - ^{Aug 10, 1886, gas -}
Unworked undried -
J. F. M.

1 Milligram Naphthalin -
Exhausted regular reversed
Current - Clamps clean
globe clean fil shiny
run fil up higher than
usual by running peg
Down quickly -

1166 - Aug 10 1886 jar

Same as 165 - J. F. H. H.

appearances same -



Aug 10 1886 Tar

167-

J. S. Mills

Dried on Drier -

2 milligramms Naphthalin
in globe - let it burn
at about 16 @ 20 candles
as it seems to deposit best at
lower incandescence on bringing
it up high the globe was
very much whitened there
seems to be a chemical
reaction taking place -
fil very shiny by deposit both
clamps although I didn't
reverse -

168

Aug 10 1886 Tue -

J. F. Webb

Dried and dried -

2 milligrams terchloride Carbon
 got vac then quickly run to
 about 16 cp then let it stay
 deposit good at 16 cp +
 lots gas comes off & still
 let it burn notwithstanding
 the great amount gas - don't
 think it Chlorine as it
 didn't dirty tube but very
 little; globe kept perfectly
 clear of blue; a small
 amount whitening took place
 both sides near clamps perhaps
 Chloride Copper - run it up high
 didn't whiten any more but
 when very high blue came in
 when ~~run~~ ^{run} down clamps clear globe
 clear & fil very shiny -

7/10/86 No 169
 5-amp. Res. Fllth - Lamp O.D.
 4.5 14.8 @ C.P.
 106 - 75 - 141 - 3539 - 9.32 - 149" 16
 138 - 108 - 128 - 6592 - 5.01 - 401" 90
 net 40 - 90 - 353 - 665 - 986
 up - min - min - min - min - min
 80 - 80 - 72 - 50 - 40 - 36
 Minutes lasted 96.0

Not very black for life
 Clamps clean for dead blocks

Aug 11 1886 -
 169 - Dried - J. G. G.

1 milligram terchloride
 Carbon - worked neg
 not reversed - blue in
 globe took it off p
 rather quickly globe
 clear filament shiny
 but cant see that there is
 any deposit of any
 consequence. Clamps clean

170

Dried - J. S. M.

Silicon $\frac{1}{2}$ thumbful
heated by Kero - Extra
was in vac to connect
to it - one clamp
moderately clean other
dirty fil shiny -

171 -

Dried - J. F. 10/10

1 Milligram Anthracene -

didn't heat with Kerosene -

Clamps clean filament

Very shiny poly deposit slightly

globe yellow tint all over

White volatilized anthracene

in neck

9/10/86 No 171 - Box 8
 V-air - Res - Filter - C.P. - C.P.
 100 - 71 - 148 - 3318 - 9.94 - 109 - 16
 138 - 106 - 130 - 6459 - 6.11 - 409 - 80
 211 - 50 - 260 - 570 - 885 - 980 - 1240 - 1480
 11 - 11 - 11 - 11 - 11 - 11 - 11 - 11
 80 - 72 - 56 - 40 - 34 - 33 - 31 - 30

Minutes tested 1505

globe only yellow
 fil black clamp clean

Aug 13 1886

TAE

J. S. Webb

Tried several lamps having filaments
Coated with Alumina, Magnesia —
Calcium, Beryllium Zirconia —
from their chlorides & acetates —
dipping fibre in solution heated
of kerosene chimney to decompose
then passing quickly through
flame — The coating holds on
filament up to about 20
to 25-cp then it seems to
jump off although some
filaments hold very well —
The contraction of the oxide while
the filament doesn't contract
but very little causes this
Cracking

Aug 13 1866

101

J. E. Little

Marten has dipped a dozen Carbons
in Coal tar in Bengal & dip them
in water then dip them in
finely powdered Oxide of
Aluminum, Magnesia, and
put them in mould & they
are to be run through the
Carbonizing process, the
Theory being that the tar
will carbonyze & lock the oxide
together - the coating is
very fair though not
complete - I am getting
ready a lot of specimens
about $\frac{1}{2}$ Carbons @
brought up to 600 deg fahr
& these I am going to dip

Aug 13 1886

J. F. M.

in Tar Licorice etc & then
in infusible oxides & then
run through to final Carbonization
the shrinkage of the Carbon ^{used}
then be about equal to the
tar Carbon - also I am going
to dip some bamboo filament
in tar & ~~the~~ infusible oxide
& Carbonize in regular way.

I am also going to soak
fully Carbonized filaments
in tar - Licorice & other
Carbonizable ~~top~~ materials in
Liquor shape soaking
the filament before
Carbonization also when

Aug 13 1886 TAC

When partially Carbonized
(this is probably the best period)
& when fully Carbonized
so as to fill up the spaces
& breaks due to the initial
Carbonization of the Bamboo,
J. S. H.

9/14/86 No 172 Box 2
 v-amp - Res - Fth - Lamp C.P. @ C.A.
 113 - 73 - 105 - 362 - 9.11 - 146 - 16
 147 - 110 - 134 - 7167 - 4.60 - 368 - 50
 set 80 - 90 - 110
 up - min - min - min
 80 - 76 - 64 - 52
 Minutes last at 220

Rather dark for life - clamp
 perfectly clean fil dead block

172

Dried Aug 13 1886
J. H. J. E.

2 Mellegroni Chl Carbon -
 it all disappeared before heated
 lamp - run it to red white
 quickly & allowed it burn
 for several minutes then
 rather high - reversed
 globe clean clamp
 Clean fil not as shiny
 as it comes from Carborundum

173 - Dried

Aug 13 1886 ^{vac} ~~Aug 13 1886~~

2 milligrams of Terchl
Carbon in glass tube
set about 16 Cp good
shine afterwards went
away so that the filament
is not as shining as
it came from furnace -
clamps & globe clear -

9/14/86		10/1/86		Box 3				
v. amp.	Res. Filts.	lamp	C.P.	U.P.	H.P. @ C.P.			
100	- 73 - 139 - 3250 -	1021 - 165	" 16					
132	- 104 - 124 - 6061 -	3.94 - 935	" 80					
act	30	90	180	470	570	1175	1255	1575
cp	min	min	min	min	min	min	min	min
10	- 64 - 60 - 50 - 44 - 42 - 36 - 33 - 31							
	globe not very dark much less than object of yellowish cast							
	Minute last bit 1630							
	Globe clear							

9/14/86 No 174 Box 6.
 W - amp. Res - Filts - Lamps C.P.
 104 - .78 - 133 - 3575 - 9.23 - 148 " 16
 135 - 1.11 - 121 - 6656 - 4.97 - 398. 80
 set
 up. -
 80 -
 And in 2 minutes

174 - Dried

Aug 13 1886

Tube with 2 milligram
 J. E. M. - Tar
 Terchl Carbon -

brought it up quick.
 fil no brighter - no blue
 took it off before really
 good vac as wanted to
 get it off before Hg
 had chance get in
 no blue on clamps.
 Clamps not cleaned
 fil no more shiny than
 regular globe clean.

9/14/86 175-175 Box 5
 v-amp - Res - 7th - Pump C.P.
 77 - 74 - 131 - 3185 - 10.36 - 166 - 16
 127 - 105 - 121 - 5885 - 5.61 - 449 - 50
 set 60 250
 up - min - min.
 20 - 76 - 50
 Minutes lasted 290

globe yellowish black
 Clamps pretty clean fil block
 white at neck globe

175- = Aug 14 1886 tag
 Dried several hours
 j.s. 11th
 5 milligrams Chl Carbon in tube
 put in good vac & then quickly
 run up to 90 @ 100 cp then
 put it back to 25 cp & let it
 run - fil. deposited on -
 globe clear except at neck
 yellow white deposits clamps
 not cleaned no halo or blue
 in globe took it off before
 good vac

22.7.21

Aug 14 1886

J. S. G. H.

Put two regular Carbars in
platinum Clamps, then ^{or dipped} soaked in
Coal tar several times, drying
slightly after each dip —
Then gave them to go to seal in
also another Carbar in platinum
Clamps clipped several times
in liquorice water gave to go
I propose to slowly heat lamp
from low heat as driver to
about 600 Fahr put on pump
& bring up slowly as to
Carbonyl — The O. of the
Liquorice will probably
Oxide the whole of the Carbar
if not sufficiently carbonyl
the driver — but the 1st will
Carbonyl in vacuum OR I think

176 - Dried with heat ^{of 576}
 fil in flat clamps soaked
 several times liquorice
 globe clear fil bright
 clamps dusty -

9/14/86

No 176

v	amp	Res	Filts	clamps	C.P.
				H.P.	H.P. @ C.P.
113	75	151	5760	5.78	14 " 16.
147	110	134	7167	4.60	568 " 80.

set

up

80

Work immediately.

9/14/86 No 177 Box 5-
 v-amp- Res- Flkls- Camps C.P.
 H.P. H.P. @ C.P.
 116 - 82 - 191 - 4203 - 7.85 - 126 " 16
 150 - 1.18 - 133 - 7520 - 4.39 - 367 - 80
 pit 50 60
 up - min - min.
 80 - 96 - 80

Minutes listed 80

globe yellow clamps dirty ones very black
 white around neck globe
 fil browned

177- Dried no heat - Iodine in Drier

J. F. 106
 Iodine in phos Cup -
 got sealed tube & run quickly
 to 100 cp not bet air came
 off no halo no blue - this
 may be due to dirty pump
 the Iodine drier & both
 must put something in to
 catch it before it get to tube
 think Almagmatel Copper
 answer & use no Iodine in
 cup only in drier -
 fil not shiny seems to be
 acted on clamps
 untouched -

178 Dried on drier with heat,
Soaked in Tar - J. F. Miller
Clamps don't hold

179—

Dried without heat or drier

Godene in Drier - j. 5. 11. 11

Godene in phase Cup - color splashed
the pump didn't dirty so
bad but it got vac -
run it up quickly. fcl
Very shiny - slight halo
after running little while
no blue in globe -
Clamps dull.

9/14/86 Nov 179 Box 8
V-airp - Res - Fills - Lamp cap
103 - 70 - 147 - 5185 - 10.86 - 166 - 16
136 - 100 - 136 - 6017 - 5.48 - 488 - 80
set - 80 12.5 1/2 inch fil shiny
af - min - min. near clamp -
80 - 70 - 56 Dave clamp has
lamp block on P clamp
Munich tested 265

180.

Dried on drier no heat
godine in drier - J. 5. 11thgodine in phos Cup pump dirty & stuck
fil rather shiny. did not get good
vac - globe clean clamps
untouched no blue or black -

9/14/80

No 180

Box 2

v. amp.	Res.	Wt.	Temp. - G.P.	Wt. - H.P. @ G.P.
107 - .77	139	3628	7.09	145 " 16
140 - 1.12	125	6946	4.75	380 " 80

set 60

up min.

80 - 80

Arc'd

Thumbnails lasted P.D.

globe yellow white
fil still shiny

9/14/86 No 181 Box 7
 v-amp- As- Fills- Clamps C.P.
 106-79-134-3716- H.P. H.P. @ C.P.
 137-110-129-6780- 5.87-142 " 16
 4.91 5.38 " 80
 Lit 50 50
 up- min- min
 80-84-80
 Minnie has led 180

Yellowish globe fil dead black
 Clamps dirty white deposit near
 Clamps then deep yellow

181- J. F. Ott
 Dried for $1\frac{1}{2}$ hour in drier
 without heat - Iodine in drier
 put in pump with U shaped
 tube with Copper shot cleaned
 by SO₂ - new phos anhydride
 & 10 @ 15-milligram Iodine
 on top of phos anhy -
 got quick Vac - no halo
 no blue, brot it up very
 high clamps get clean
 when heat on fil but
 quickly afterwards darken
 by residual Iodine
 fil very shiny - vac took it
 off moment later shined
 clear - hence not very good
 vac - globe clear -

182 - Dried on clean drier ^{J. S. 1886}
 with only plos anhy & on
 only 5 minutes -
 Copper plated Clamps coated slightly with
 silver Cyanide Solution.
 put on pump & quickly Exhausted
 very little air came off very
 quickly on almost instantly
 clamp very little of any air
 came off - the silver nearly
 all volatilized on neck of globe
 leaving clamps Copper Colored
 fil not very shiny

9/15/86	No. 182	Boze
V-amp - Res - Filt -	Clamp H.P.	C.P. H.P. @ C.P.
110 - 175 - 140 - 3672 -	8.99 - 144 -	16
143 - 110 - 130 - 6737 -	4.74 - 379 -	80
set 50 - 115 - 240	Globe rather dark. Clamp shiny fil black.	
50 - 80 - 60 - 54		
50 - 80 - 60 - 54		
50 - 80 - 60 - 54		
Minu L. lasted 335 -		

183 - Dried 10 min - J. S. Webb

Long tube with about 8 mlyms
Chl Carbon - got vac then brought
it up rather quickly & got
vac before much chl carbon
Volatilized then brot to white heat
& heated chlC with Kerosene.
good deposit - a very white
volatile substance apparently
2 of them in vac. Clamps
dirty had Copper shot in
U tube but didnt seem above

Chlorine - good vac -
filshiny - although not
Exhausted only 20 -

184

Dried -

J. Platt

Platina Center piece -
fil mod shiny - clamps lead
Color globe clear -
great deal gas came off
before heating - Connecting
platina to Negative side -
down stairs -

185- =

185-

Sept 16 1886

Dried — J. S. M.

Aluminum sheet with
Center wire - fil slightly
formed one side clamps
not cleaned - globe
cleaned - Connected
to Negative Side down
stairs -

9/16/86 No 186 Box 7
2- amp- Res- Fills - 4 1/2 G.P. H.P. @ 0.1?
107- .67 - 160 - 3185 - 10.36 - 166 - 16
143 - 104 - 137 - 6547 - 5.14 - 203 - 80
Wire to Negative.
Blue in globe which some disappeared,
Blue on clamps, which increased in size and
thick, until a deep blue sphere formed, about 1/2
in diameter. - some settled to close deep blue
along clamp.
Mimic's tested 10- arc'd

arc'd

186 -

J. F. M.

fil of bamboo soaked
Tar - clamp clean
fil not shiny globe clean

9/16/86 No 186 Box 7

W-amp-	Res-	Filts-	Lamps	O.P.
101-92-	109-	4114-	8.02-	128 " 16
132-135-	97-	7884-	4.19-	335 " 80

set - 30
up - me
80 - 80

Minutes lasted 50.

How in!

187-

Dried quickly - J. T. 6th

Copper clamp nickel plated
 by Hamilton not well worked
 great deal on when clamp
 got hot - some nickel
 volatilized - probably Cu
 melted green color on neck
 Lamp - clamps not very
 shiny fil little brownish
 one side globe clear -

9/18/86	11/20/87	Box 3
V-amp- Res- Filts- Lamp	C.P.	C.P.
108-76-142-3632-9.09-146-16	4.12	4.12 @ C.P.
144-1.14-127-5804-5.69-453-80		
set 40		
up - air		
80-78		
Carbon loose in clamp.		
Minutes latched 225		

188 - nat dried J.F. 1880

small glass tube of
Potassium heated after
vac obtained, fil shiny
Clamps clean globe
quite yellow on one side -
metal on neck glass -

No 188	Box 5
V - anip - Rio - 1 lbs - lamp	C.P.
112 - 75 - 149 - 3712 - 8.90 - 142 + 16	H.P. - H.P. @ C.P.
147 - 107 - 137 - 6957 - 4.74 - 579 + 80	
set 40	
up anti	
80 - 89	

Minutes last set 4.5

Accidentally cracked + exploded
gel block -

189 - Not dried J. S. O. H.

Small piece of Palaeum
got vac' - heated only
gently not enough to
volatilize it - clamp
clean - globe clean
filshing

9/17/86	112 189	Box 7
v-amp - Res - Filter -	Cauchy H.P.	C.P. @ C.P.
110 - .75 - 149 - 3650 -	9.04 - 145 -	16
149 - 1.12 - 135 - 7317 -	4.51 - 361 -	80

at

up

80

Blis on clamp - Resistant on up.

Prod in 5 minutes.

9/17/86 No 190 Box 7
 n - amp - Res - Fills - Lamp C.P.
 102 - 110 - 93 - 4964 - 6.65 - 106 - 16
 125 - 1.46 - 88 - 8268 - 3.87 - 300 - 80
 act. 30
 up - min
 50 - 80

Minute lasted 40

Globe whitish & clean
 fil beautiful shine
 broke in center of at shing
 clear up to knob.
 End of fil clamp piece black
 clamp unchanged

190 - Undried - J. S. 1885

Small tube Patassum not
 blotted - had prob. 6C, same
 Benzoin - got 1/2 vac
 say 22 inches Mercury
 Sealed off then heated
 Patassum - with Kerosen
 white cloud of Monoxide
 probably then formed -
 heated it strongly then
 brought up lamp. suddenly
 it went up in Cp greatly
 saw sky & air not found
 it was deposited on
 fil most shiny has seen
 change black globe
 slightly opalescent -

191

undried - J. S. 100

25 milligram Naphthalin

in side tube - notice it
deposits at yellow white
by natural evaporation
Naphthalin without heat
elegant deposit & come
off slow - if too quick
makes yellow deposit -
globe somewhat pale
clay not clean -
ful very shiny -

192- Undried
Regular Lamp - J. F. Oke

Tried Experiment of putting condenser

& Wfands with & without resistance & magnet
across lamps & in series around
magnet to effect the carrying & the
had no effect perceptible

got good vac reversed current, then
broke vac & reexhausted 2nd time very

small amount gas came off reversed
current got both clamps red hot,

then broke vacuum slightly say to 24
inches & reexhausted, no air at all

came off this time allowed it run 1/2 hour
to get high vac without heating sealed off

heated globe at times for 1/2 minute with
this lamp - fil. not so shiny as

comes from Cambridge house. clamps
shiny globe also -

193- Dried -

J. S. 10th

Washed with Nitric acid dilute
rinsed then water put in with few
drops Silver plating solution -
silvered clamps. Then well rinsed
put on drier - got vac removed.
Current worked high & melted
clamps heated bulb with
Kerosene Lamp - the broke vac to
say 27 inches reexhausted
ran lamp up & got no air.
then let it run for 1/2 hour -
silver all went off clamps to
globe - fil. shiny.

194 - undrilled J. 5. 66

got vac - reversed & got both
clamps red hat got high
vac then broke vac to .27
inches; reexhausted & left it
run $\frac{1}{2}$ hour after got solid
like heated & softened
stone 60 minutes before

Sealing - clamps
clean globe clean
fit shiny -

195-

Same as 194 -
ful not fully shing -

196-

J. S. O. O.

Same as 193- except
vac broke & little tube of
Chl Carbon put in - fil thin
bot to 16 Cp and allowed
to burn until Chl all gone
& blue came on running
high - little whitening &
undecima in neck clamps
Clean - fil not deposited
in or at least not more
thick than from furnace

197
Same as 193

J. S. 100

except on breaking the
some phos anhy wet or
viscous got in bulb -
put same tube Chl Carbon
in & worked as with 196 -
great amount whitening in
neck clamps fairly clear
other part globe clear - fl
not deposited on in fact
one side slightly browned -

198-

not done

J. S. 1880

Got Vac brake it little slower
any got in g'ole - re exhausted
Lamp worked poorly all
way through round
Amount - Clamps clean
fil not very shiny -

.199 - not done

Put on 3 minute pump with
side U tube containing glass
anhydrous CaCl_2 & a cup for
heating things, - in cup
put Chl. Chromium -
got vac reversed & got clamps
red hot, then let in Chlorine -
got vac heated then let
 Chlorine - again - got vac &
sealed off - clamps clean
filshiny globe clean -
Vac good -

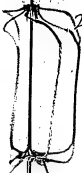
200.

unwelded

Sept 22 1886 -

J. S. Hls

Put on regular pump with
 stop-cock U tube containing
 Phos anhyd & bulb containing
 Pentachloride phosphorus
 got vac on all then shut
 off Pentachloride —
 the tube badly blocked
 got vac reversed cannot
 heated both clamps
 red hot & got them clean
 then turned cock & let
 in pentachloride. This
 broke vac to say $28\frac{1}{2}$ inches it
 got vac again quickly as it was
 probably obstructed by pentachloride
 The pentachloride attacks & blocks
 Copper - got good vac & sealed
 off - fill out shiny - clamps
 block globe clean fall
 deposit - This lamp had pentachloride on globe
 when first worked 201 had none -



201

J. S. 10th

Same as 200

Except no penula in
globe when first started
except perhaps little
that was in pump -
clamps one dirty other
somewhat clean fil
shiny globe no deposit
of any kind —

200

v- amp- Res- 7 lbs- ^{clump C.P.} _{10.12-11.14 @ C.P.}

104- .72-145- 8320- 9.94-159" 16

136- 1.06-129- 6400- 5.15- 412" 80

201

102- .72-142- 3250- 10.13- 162" 16

131- 1.03-128- 5975- 6.52- 442" 80

202.

107- .75-143- 3585- 9.25- 148" 16

137- 1.08-127- 6550- 5.04- 403" 80

203

135- .82-165- 4900- 6.73- 108" 16

and on Photometer.

204

103- .75-138- 3425- 9.64- 154" 16

133- 1.10-121- 6475- 5.10- 408" 80

202

undried J.F.B.

10 undried

Strongly ignited Caustic
 Petash - clumps clear
 blue hangs persistently
 Cant get off - vac nat
 very high - the fil
~~has spots in it~~
 shiny - globe clear -
 Had a spot in it,

203 -

Same as 202 -

had no
~~no~~ spat in it -

1

Sept 22 1886

204

Undrilled -

Same as 201 - one clamp
dark -

205 —

J. S. Little

Undrilled —

Shiny fused Canotic Palash
25 milligram; run on
pump for $\frac{1}{2}$ hour with
Knoesen Then for $\frac{1}{2}$
hour after good vac
then brot it up quickly
to 100 Cp' — very little
blue & strange to say
scarcely any air came
out & no carrying to
clean clamps even at
100 Cp' — clamps unclamped
took it off quickly after run
up fil shiny — KO. St. x T.
glass — funny lamp

206

J. C. 1880

Same as 205 -

Except some blue &
also halo which partly
cleared one clamp
didn't reverse either
on 205 - or this if I
~~was~~ one clamp dirty
other not very clean -
worked it like 206 -

Kerosene was on this
Larger -

207-

Sept 24 1886-

undried -

J. F. Otto

Put in on pump with U tube
containing tube of Chl Silica
Cut off the Chl Si at Vac
& then let in Chl Si again -
run it up quickly. showed
white carbon
vap. showing probably deposit
Silicon - clamps
Clean - globe slightly
tinted in neck -

208 - undrind
J. S. H.

tried KO in globe
almost impossible in
fact impossible work
blue hole off, clamps
great Lindsey melt,
fil browned one side
clamps clean
globe clean

209.

Same as 208

210 —

9 Feb

U tube with Cyande
Solur - got vac. heated
Cy & let it in
their lighted. Carbon
when about 25-inch
Hg - deposit of Carbon
globe darkened & also
whitened - clamps
block -

211

undried — J. S. H.

20 mg Godide Pal asoun in
globe, works well —
clamps clean —
globe clean fit very
shiny —

212

Same as 211

213

Same as 211—

214 -

Under
J. S. 11/15

Reg lamp left on
pump about 2 hours
before putting Aunt
on then on about how
could bring it up to
about 80 before Halo
appeared - cleaned
clamps - very little air
came off when clamp
got hot - sealed off
not very good vac
fil thing globe clear
clamps clean

Sept 26 1886

Memorandum -

J. F. Ott

Tried
and very
good

Put flat platinum inside of filament &
soak in syrupy chloride platinum; or
Double chl of Pt and ammonia heat & see if
looks together (10) metallic pt deposited.
also immerse the joints in syrupy
solution of chl plat & pass current to bring
joint to red heat or use arc decompose the
PtCl₄ - also try Hg amalgam & Cu also Pt
amalgam. -

Put bamboo filament in sealed tube
along with phos anhyd & chloride Carbon
in coal end also some Copper dust to
absorb the Cl₂ - then treat to red heat
protect eyes - do it slowly try different
things in tube try filament with PO₂ -
also in coal part also with nothing also
ascertain what temperature great change
takes place - carbon - was said both a
thermometer try Sodium to absorb H₂O
instead PO₂ - -

Put PO₂ - Chl Carbon Copper dust & fil
bamboo & get vac then carbonize
heat - also fil with CCl₄ only

Memo — Sept 26 1886 J. S. Ott

Paint a plated joint with syrupy
PtCl then get vac — (heat the Cu joint in
flame before putting on PtCl) then
bring fil up so clamp heated & PtCl
decomposed — also make a plat
socket break shank of carbon insert
tight fit then work syrupy chl Pt in
& decompose by needle point flame or
arc.

See if by long running a lamp can be worked
up to 100 Cp without cleaning clamps.

Use spark gauge with carbon electrodes
at low pressure (10) point where greatest
volume spark-spark must not touch
inside glass, — see if carbon deposited
also try in gasoline gas to deposit
with spark. Try two carbon electrodes
side by side in gasoline & use jump

Spark — Try lithium & sugar on plat
to shank & put whole in Naquesa so
it won't melt, — make 12 plat caps
by flattening & spiraling and fit wire break
shanks off carbon insert & plate
with Cu gold life —

Memo Sept 26 1886

J. F. Ott

Nitrocellulose the surface of reg fibres
immersed in Ether alcohol solution dry
& then reduce by Sulphhydrate ammonia
also cut filo out of Nitrocellulose
paper - immersed in Ether alcohol
dry & reduce to Cellulose by Sulphhydrate
ammonia - try stannite sodium

See if can get solvent for charcoal
looking residues from the Oil Co
relate. See if so often - make

some Caramel Carbonize a fil in
hot sugar treat sugar with
slaked lime then boil down hard
& see if it Carbonizes without melting

Soak some paper (smooth) in sugar for
2 days also caramel also starch
dry & cut same filaments get life -
Draw fibres through die not see
amount lengthening & shrinking

215 undried J.S. 11/15

Gasolene in U annex tube -
got vac - let in gas got
Vac det in gas & put
lamp at $\frac{1}{2}$ candle power
as vac increased went up
to 2 cp - after good
Vac run up very high
Clamp sort of melted
didn't re-use - hole strong
Couldn't get rid of it
globe slightly whitened
fil oking but guess very
little deposit. Clamp that
was heated black & then
unchanged - slight green
on narrow neck due to Cu -
Validized without being oxidized.

216 - undried - j. 5. 06

Put on 8 foot tube with
U in Ice water to get rid

Hg - Spectroscope showed
very little Hg - fil slightly
brownish clamps + globe
Clean

217 - undried - J. F. G. H.

Put on U annex with gas lamp
got vac several times & let
gas lamp in after each burning
Lamp at $\frac{1}{2}$ c.p. - finally
got vac good run her up -
let it burn 20 mins -
noticed carbon browned
broke vac slightly & run up
high depositing on carbon
which is very chunky - got good
vac sealed off - globe
very slightly white with
tint brown - clamps clean.

218

J. S. 1885

Same as 216 - but
there was strong Hg
in spectrocope - didn't
reverse outside fil
browned, - clamps clean
globe ditto.

219

undressell -
J. F. H.

Put in on vac pump let it
run for $\frac{1}{2}$ hour after getting
solid tube. Brok it up very
slowly. Taking care not
to clean clamps reversed
Current at last let
it burn for hour after
wkg. are all out at 80
Cp - fil browned one side.
Tube darkened slightly
in spots matted carrying
This is seen in lamps at
sometimes, it is due probably
to high Vac - clamps
finally got cleaned
when it was at 80

220 - ~~unfound~~ - J. S. M. H.

20 feet tubing in 9 ce water
8 feet from pump - fil burned
long while at 30 cp when
spectroscope showed faint H γ
could put whole 150 volts
on without melting clamp
change clean fil little
off color globe clean -

221 - unworked

Reg lamp got vac worked
clamps clean let in ACP
then reexhausted heated
got vac then let ~~ACP~~ in
again got clean tube
heated then sealed off

222 —

Lamp healed keys
good vac didnt put
current on. sealed
of ~~didn't run down~~

Lamp Factory Notebook, N-86-07-07

This notebook covers the period July-September 1886. All of the entries are by Edison. The name of John F. Ott appears frequently as a witness. The book contains notes, drawings, and calculations relating to lamp experiments. The lamps are numbered 21 through 158. Loose pages containing the results of lamp tests have been pasted onto many of the notebook pages. The spine is labeled "29." The pages are unnumbered. Approximately 250 pages have been used.

No 21 July 7 1886 Vol. 1. 5th

Regular unmasked lamp
put on water jacket pump
This lamp was not dried, ~~the~~
immense quantities water given
off so it gave CO every time we
heated filament, No mercury
shown in small spectroscopy.
but exceedingly strong CO in
halo - no blue on globe or if any
very faint - could not get a
vacuum - burned it for while
had to take it off - put on
a cleaned & dried lamp -
The filament of lamp taken off
badly blocked.

No 22 July 7 1886 Tag J. S. 1886

Washed & dried Regular -
poured gasoline in & then
put on Regular pump -
lighted filament & run it almost
continuously to 50 candles before
tube was quite solid - large
amount of air came out
probably H₂ from decomposition of
the gasoline -

Even after burning for an hour very
fine pin heads of air come off -
sealed it off although microscopic air
bubbles came off -
globe tinted, Carbon browned on one
side after 24 hours filament
vibrates $\frac{1}{4}$ inch & takes to rest
in 45 seconds -

NO 23 - July 7 1886 828
J. 500

Dried & cleaned Regular
Martin Clean & Pump -
put it on Jacketed pump
to take place of NO 21 -
filament oxidized & locked
badly showing water - The
Chloride Calcium used for a
drier in this pump shows no
signs of water. It's probably
no good and phos anhydride
is requisite,

1024 — July 7 1886 709
J. S. 100

Washed & dried Regular -
put thumbful of carbonate
Potassium in globe. got vacuum
heated $KClO_2$ an. gave off
lots gas, heated filament
globe very blue with mercury
so strong toned scarcely see
 CO_2 with little spectroscope,
stopped heating $KClO_2$ when
it ceases giving off gas
got solid tube, burned lamp
quite high 80 cp for 10 or
15 min. Reversed Current
Clamps clean - Shine very
strange to say don't seem to be
taken off - No blue in Clamps
globe clear - after 24 hours
filament ~~is~~ comes to rest
in about 4 seconds Seal

J. S. Ott July 7 1886 708

25 - Washed & dried Regular
put on Regular pump got vacuum
broke it & took off Lamp - then
took smaller tube & put phos anhydride
down through it to bottom of lamp
a very little got on side globe -
heated globe to make it stick to
bottom, then put it on regular
pump - heated this with Kerosene
for several mins gently got
solder tube & broke it from time to
time constantly pulling plug
run it for 20 mins with solder tube
no Kerosene or current then put
on current & broke tube, very
little air comes out each time,
allowed it run for 20 mins no current
then couldn't break it - Reversed
current, let it burn 10 mins at
50 cp - Couldn't break tube let it
run for 10 minutes, Hg blue went
away lamp became white no hal
clamps dirty - Shine not affected
slight brown tint near clamps in a spot
slight brown tint near clamps in a spot

after 24 hours filament vibrates $3/8$
of inch & continues for one minute.

Cracked

26 - J. F. Ott July 7 1886 TAE

Washed & dried Regular

put tube down & forced small
quantity size pea Phos anhydride
to bottom, a little stuck inside
globe; Then heated globe make
Phos Anhy stick to bottom of
Lamp - put it in water jacket
pump; This pump had some
Phos Anhy put over the 'chloride
Calcium' - heating lamp
gently with Kerosene; Keep it
exhausting while so heated. brought
Carbon to dull red for $1/2$ min -
Keep 1st peg in on 2nd Current for 10
min - then heating for $1/2$ hour with
Kerosene with solid tube to give plenty
Change for Phos Anhy in globe to
absorb the water vapor - The small piece
of Phos Anhy dropped down partly on
side globe partly in full tube where

9.5.04.
it became viscid - probably some
Volatilized - then brought lamp
up quickly to 16 Candles &
disconnected considerable air
came off - then heated it to
50 Cp - considerable air came
out. The globe is very blue
from Mercury Vapor where did
it come from - Can't get rid
of Hg blue in globe - its very strong.
Can't break tube, allowed it burn
10 mins at 50 Cp sealed off -
globe slightly tinted filament
browned both sides. ^{Vol} slight
Volatilization Phos only in bottom
globe. Clamp dirty, -
after 24 hours filament vibrates
& comes to rest in one second -

Seal Cracked

No 27.

J. S. 1886

Washed and dried Regular

$\frac{3}{4}$ hour in drier - Then with center tube
put $\frac{1}{2}$ thumbful phos anhydride
at bottom of lamp none touched
sides, just little bit got on inside part
between clamps - put in long fibre &
got most of it off - heated lamp
in kerosene to soften & stick phos
anhydride to glass so it would
drop down - put it on a Regular
pump with Kerosene Lamp
under bulb - It got a solid tube
very quick - on first current 9
put 1st plugs in which is 4 @ 5 -
plugs less than red & keep pump
going with solid tube this current
& Kerosene for $\frac{1}{2}$ hour. - put it on
2nd peg at 3.26 pm. It didn't break
tube but there are small pin heads coming
down all the time but few in number
after running gradually to 4th peg
& dull red ran it up quickly

J. S. 006
to high cp great deal gas came
off but inside minute it all went
+ couldnt break tube even by reversal,
guess this was true air not water,
shine all right - globe very blue
no holes - lamp clean - filament
much bent, clamps not clean
phos anhyd struck to bottom none
went on side — after 24 hours
filament vibrates $\frac{1}{16}$ & came to rest
inside of 2 seconds Seal Cracked

^{J. S. Little}
General Experiments - July 10 1886

Ta8

Carbonate & Bi-Carbonate dry ground
up with pyrogalllic acid absorb O₂ & N₂
from the air use this in pump —
Carbonate is better than Bi-Carb —

Phos Anhydride can be kept &
moulded in any shape under
gasoline & of course almost
any Hydrocarbon —

Tested cleaned lamps after
going through washing with
Bichromate of Potash & SO₄
& distilled water - faint
traces SO₄ with Chl Barium
but second boiling & washing
with distilled H₂O got rid
of it entirely =

July 10 1886

708

J. F. Ott

Mercury is attacked by Sulphuret
of Potassium - perhaps it won't be
dry - Can use this substance
in pump to absorb Hg Vapors.

Aug 21 1886 Tag 9.00
28 - started 1150. $2\frac{1}{2}$ lb Hg pump
Slowest pump yet. Lamp washed
by Martin on 12 of Aug. and until
today 21 Aug. with Corkin had
previously been washed in Bichon's 504
crined regular way - 3 put ~~the~~
Phos anky in Exhaust tube & made
regular contraction both sides of
it. - Heated lamp while exchange
by Kerosene - Lamp - Took it off
at 3 o'clock worked it up very
slowly - then burned it for about
hour at 80 cp - quite blue in
globe, but didn't remove poles
one side somewhat browned
other side very shining. Lamp
inside that is browned is dulled
other pretty clean - globe
considerably tinted in irregular
blotches.

8/21/86

No 28

V- amp - Res - Fills - Lamps - CIP @ C.O.
 102 - .85 - 120 - 3849 - P.67 - 187 - 16
 134 - 1.22 - 109 - 7211 - 4.67 - 866 - 80

ad - 40 76 180 312
 of - min - min - min - min
 PU - 78 - 72 - 62 - 50

Munich's lastest 600

Bulb very block one
 Clamp block

Vacuum good

Aug 21 Tried running lamp
 off on vacuum Regular then breaking
 vacuum & testing sides of globe
 for transparent film - didn't get
 any put another lamp on
 run off regular but burned it
 for about 40 minutes at 80 c
 got blackening in blotches. This
 came off in film quickly
 with HCl - Couldnt dissolve it
 with HCl + nitric acid together or
 addition of SO_3 - on heating.
 Either there was a very transparent
 film in first lamp that couldnt
 be seen which was silica from the
 ash or the film is a compound
 formed by H_2O & the Carbon
 which compound is not thus attacked.

Aug 21 1886 - J. F. H.
No 30

Put solution of permanganate
of potash in globe. evaporated
water leaving a film. run it
regular + then allowed it stay
on pump hour at 80 C p about
globe blackened in very
conspicuous blotches. certain
places show absolutely no
blackening - No Curve

8/23/86/ 11⁰ 30.

V - amp.	Res	Fills	amps	C.P.
98 - 80	122	8437	9.57	103 " 16
129 - 112	110	8371	8.78	414 " 10

set - 20
up - min
Pv - 68.

Acc'd in 20 min.

J. S. M.

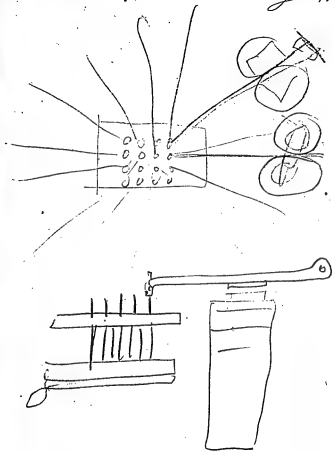
29- Slow pump - phos only
 in tube & bulb - got vac
 then heated it quick got
 all air came out & then
 power stopd got good vac
 & sealed off - heated one
 side partially by
 Kerosene Lamp -

8/23/86		No. 29	
V - amp	Res - Fills	Lamps	C.P.
113 - .11	139 - 8451	9.57 - 153 "	16
143 - 1.03	140 - 6372	5.81 - 491 "	80

act.
 up
 80.

Ac'd in 20 minutes

J. S. Ott
Aug 24. 86



T' THIS IS THE

NO 32 -

Same as 31 Except used
solution of Nitrate ammonia -
Clamp melted - Try
another - J. S. 11/11

8/23/96 ¹²¹ No. 33

100	clamps	Res	27 lbs	clamps	C.P.
184	73	142	3362	282	157 " 16
137	103	133	6238	529	423 " 50
201	40	50	180	258	430 745
14	mm	mm	mm	mm	mm
80	66	62	53	30	44 46
938	1253	1925	1575	1115	
mm	mm	mm	mm	mm	
39	32	30	30	29	

Wm. L. Laid 2005

globe brownish black
Clamps clean

33 -

J. F. L.

Same as 31 - except

Solution Chloride Copper -

Very slightly blackened - globe
at first white afterwards got quite
blue - probably Chloride decomposed
bulb clear except slight Coppery
faint deposit down by clamps.
Clamps clean but dull -

8/20/61 11:34

V-amp	R _a	I _{tbl}	Lamp	H.P.	G.P.
102	52	141	3230	10.21	103 " 16
132	105	125	6149	0.37	480 " 80

act	40	PV	150	250
up	min	min	min	min
10	70	62	52	44

Mum is tested 325-

34 - Same^{as 31} except Sesqui-
 Chloride Chromium with
 little proto chl Chromium
 = Sesqui dont seem dissolve
 but fine powder - Lamp bulb
 good vac filament ^{slightly} browned
 on one side - reversed
 Current. Clamps clean but
 dull --
 Blackened globe - one side
 filament not dead
 black - clamps clean

8/23/86/ H² 35-

V-amp-Res-Tells-amps 0.0
 106-72-147-3362-4.2-4.2 @ C.1.
 13F-101-127-6591-5.01-401-80

Set 40 80 130 210 450
 90-78-68-56-49-59

minutes last 580

35 = Same as 31 ^{J.F. 100} except

perchloride of Antimony in
 water = solution rather
 opalescent =

clamps clean - filament
 seems unbrowned either
 side. globe just shade
 tinted

globe Ordinary black
 clamps clean
 filament dead black

36 - Same as 31 - J. F. 11/10

glacial phosphoric acid -
Solution got on carbon &
Clamps -

Globe clear filament
pretty shiny - clamps
moderately clean
Nothing else noticeable.

8/25/86/ 11" 36. lamps C.P.
V- amp- Re- Fills- 420- 420 @ C.D.
105- .73- 144- 3406- 9.70- 105- 16
106- 1.03- 129- 6326- 6.22- 418- 80

alt- 40- 80- 100- 200
up- min- min- min- min
W- 74- 63- 67- 40.

Wm. L. Lister 250.

only moderately black
globe clamps clean

37 - Same as 31. J. F. Ott

Potassium Nitrite -

Solution allowed it to get on
Carbon & clamps and -
hard getting it off pumps
deposit quite large
on glass - will try a
weaker solution -

Pushed

124/866 17938
 v- amp- Res- 76.4k- lamp- C.P.
 107- 76- 140- 8898- 9.17- 147 " 16
 140- 112- 125- 6946- 4.75- 380 " 80
 act 50 60 120 200
 up- min- min- min- min
 80- 75- 73- 58- 40
 Minutes lasted 23.0

38 Same as 31- J. F. Ott

Pyrogallie acid + ~~P. carb~~
 Balash solution didn't get
 it on clamps or carbon
 & ? ... as
 much as if it had been
 running 500 minutes
 due to action of O on
 Pyrogallie - filament
 only slightly if any browned
 about same color. filament dead
 black

39 Same as 31 — ^{20 1886} 25 1886. —
J. F. Ott

Chloride Magnesium
Strong got it over clamps +
Cables — The mercury
pump stopped + Phos any
flow up into Lamp — stopped
for the night — let Lamp stay
on pump — at 9 am 24th
started it up again
almost impossible get Vac
Vac even after 2 hours bad
Phos any all viscous from absorption
of water probably from Chloride
Magnesium filament.
Browned clamps moderately
Clear — globe clear except
white deposit.

8/24/86/

11th 89.

v- amp- Res. 71 lbs- lamp 0.1
115- 75- 143- 3583- 412- 142 @ 0.10
99- 108- 129- 6636- 9.21- 147 " 18
act
up:
80

and in 20 minutes

Aug 23 1886

J. F. Ott

40 - Bisulphide Carbon

unwashed Lamp - put
it on pump - ~~the~~ pump
stopped ~~the~~ phos air by
jumped into Lamp -
let it remain on pump
but with air space all
night started at 930 on
24th -
almost impossible get
vacuum - finally got
fair one - one side
filament browned -
globe little browned in spots
phos only melted -
little spots - Clamps clear
not absolutely pure this is Bi Sulphide

globe clear

one clamp block
other clear -
filament block -

try again

92.4/86/ 172 40
V-amp - 10 - 70 - 118 8P
101 - 75 - 134 - 3494 - 244 - 87 16
103 - 110 - 121 - 6459 - 5.11 - 489 80
set 70 120
75 - min - min
80 - 3P - 80.

Minutes last 280

45 - unwashed - J.F.H.

1/2 gramme dry oxide of antimony
almost impossible get
air out this lamp -
probably it disappears

Clamps clean - very difficult
preventing them melting
on side filament browned
blue hairs Curves Bulb
very little blackened filament
lead block - clamps clean

92.4/86/ 172 40
V-amp - 10 - 70 - 118 8P
101 - 75 - 134 - 3457 - 9.57 - 153 16
103 - 110 - 121 - 6459 - 5.11 - 489 80
set 50 150 260
amp - min - min - min
80 - 72 - 87 - 89

Minutes last 280

46 - Unwashed Lamp - J. F. Hbb

Amorphous phosphorus - $\frac{1}{4}$ gram

Seems wet - Amorphous Phos

stands high heat without

Change - Lamp works well
phos sticks in one place

Clamps very dark - filament
bright - bulb clean -

No. 46		Lamps		O.P.	
V - amp	Res - Ohms	H.P.	H.P.	H.P.	H.P.
97	72	135	3097	10.67	171
127	1.00	127	5318	5.27	470

act. 50
up - min
80 - 78

My sign

Minutes lasted 145

filament only browned - globe
not black but brown light
brown

^{J. 5. 116}
N^o 50 - Unwashed Lamp -

1/2 gramme dry. Inside Lead
Kerosene Lamp used

Inside Lead Valalilge
without lead deposition
globe very yellow almost
opaque. cant see slate
filament came off

Vac very easy

8/24/86

N^o 50

V - amp	Res	Filts.	Lamps	C.P
124 - 84 - 143 -	4777 - 6.91 -	111	"	16
149 - 1.14 - 131 -	7621 - 4.39 -	193	"	45

alt. 40
sp - min
44 - 40

Thumbnails - last 10

52 Unwashed lamp J. S. 1886

Dry peroxide Barium $\frac{1}{2}$
gramme - heated with
Kerosene - filament OK
works well on pump -
~~Excess~~

8/24/86

W. 52

V. - amp - Res. H. H. Lamps C. P.
110 - 77 - 143 - 3750 - 8.92 - 143. " 16
144 - 115 - 125 - 7344 - 4.48 - 363 " 80

Set	70	180	390
4h	min	min	min
80	56	48	37

Minutes lasted 575

Scarcely any blackening globe
Clamps clean filament dead
black

27 $\frac{1}{2}$ —

J. S. 1886

Washed Regular - then

Solution Nitrite Potassium.

(not sure) may be Be Sub Carbon. but
think not - forgot to Number it.
element bright - lamp -
iridescent fringes near clamps
clamps dirty -

4/24/86 — 4-27 $\frac{1}{2}$

Oxidized before reaching
could be obtained.

Cracked - Seal

8/23/50/ $\frac{11.0}{41}$
 v-amp-Res-Fills-Lamps 2, 10
 103-73-141-3312-9.94-159-16.
 135-105-129-6222-5.25-420 " 50

act-50 150 260
 up-min-min-min
 50-71-52-58

Mmm h's lastest 815-

Very little block for the life much
 below average: fit block

41 - unwashed Lamp ^{J. S. 116}

Oxide Magnesia 1/2
 grams dry

filament slightly brown
 very difficult get off
 pump hard keep clamps
 from melting - very
 blue Hg - clamps
 very clean
 globe clean

42 — Unwashed Lamp ^{J.F. No}

Hyperoxide Barium

$\frac{1}{4}$ gramme —

Break first one make second
filament slightly browned

one side very different

Keep from Melting clamp

globe clear

8/24/86 W 42

V. amp. Res - Filts - Lamp ^{S.P.} H.P. @ C.P.
98. -72- 136 - 3141 - 1852 - 188 - 16
128. -101- 126 - 5707 - 5.78 - 462 - 80

Lat	50	150	260	460	770	940
H	min	min	min	min	min	min
	80	76	60	50	42	33

Minutes lasted 1075

globe very little blackened
Clamp clean not so much
blackened as 51

43 - Unwashed Lamp ^{J.S.B.}

Borate of Byrata.

$\frac{1}{4}$ gramme -

globe clear - filament
bright - very diff. ant
pneum. clamps melting

8/24/86/ W. 43

V - amp - Re - Fills Lamp C.P.
H.P. H.P. @ C.P.

99 - .73 - 136 - 3185 - 1036 - 166 - " - 16

130 - 1.03 - 126 - 5928 - 557 - 446 - " - 80

Set	50	150	260	460
$\frac{1}{4}$ min	min	min	min	min
80	68	50	38	36

minutes lasted 545

less than ordinary flocking
of globe clamps clear
inside filament not dis-
flock -

37 - unwashed lamp ^{J. F. M.}

Fluoride Calcium

$\frac{1}{4}$ gramme -

flint broken one

side - clamp clear

globe clear don't work

well a pump -

8/24/86/ 11⁰ 51

V - amp - Res - Fths - Lamp 9. P
H.P. - 4.0 @ 8.0

101 - .76 - 133 - 3406 - 9.70 - 155" 16

130 - 110 - 118 - 6326 - 5.22 - 418 - 80

set 30 130 260 460 770

up - min - min - min - min - min

80 - 76 - 56 - 48 - 45 - 34

Minutes lasted 820

globe only little blackened
Best yet except the 3100 minutes
lamp. There are spots where there is
no blackening -

47 Unwashed ^{J. S. Hts} lamp

arsenate antimony

$\frac{1}{4}$ gram dry

no blue in globe -

interis fall tube -

Clamps dark drab -

bulb slightly tinted near

Clamps filament

bright -

globe only moderately
black
clamps clean

8/24/86

No 47

V - amp - Res - Filts - Clamps - C.D.

109 - 173 - 152. 8828 - 9.09 - 145 " 16

142 - 109 - 180 - 8257 - 4.84 835 " 20

act - 50 150

up - min - min

80 - 78 - 67

Minutes - last test 150

44 - Unwashed Lamp ^{J. S. Oke}

Oxide Copper -
hand get off pump.
Very blue from Hg
one side flint
slightly blocked

8/24/86. W₂ 44

V. corp.	Res.	Flints	Lamp H.P.	C.P.	H.P. @ C.P.
100 - 70 - 143	3097 - 10.57	171	"	16	
131 - 100 - 131	5795 - 569	455	"	80	

Set	50	150	260
Th	min	min	min
86	70	52	41

Minutes lasted 365

globe black perhaps above
ordinary -

Sept 86 48 48

V. amp. - Res. - Fills Lamp C.P. H.P. @ C.P.

101.	-74-	136-	3318-	994-	159-	-16
130-	105-	114-	6061-	5.45-	436-	-80

Set	20	150	250	350	660	830	980
lft	min	min	min	min	min	min	min
80	73	60	52	44	34	34	30

Minutes lasted 1160.

globe very black
fil black - clamps
Clear -

488 - Unwashed Lamp ^{J. F. 11/16}

Sesquioxide of Iron
Enormous amount of gas
Comes off when heated by
Kerosene Lamp -
Clear globe - clamps
Clear - although
burned high for 1/2 hour
both sides filament
phoning -

24/86/63 1/2 63
 10 - amp - 120 - 7 lbs - 100
 96 - 70 - 137 - 244 - 11.13 - 178 - 16
 125 - 116 - 118 - 584 - 5.61 - 948 - 80
 ref 20 150 180 350 660 1230
 10 - 72 - 40 - 36 - 32 - 22 - 21
 250 - 1220
 19 - 16
 filament lasted - 1475

Black globe changes good
 Clean filament has
 black -

63 - Unwashed Lamp ^{J. F. 80}

Ferricyanide Potassium
 $\frac{1}{4}$ gram

filament badly distorted
 little hard to get off
 pump globe slightly
 tinted one side
 filament ~~tinted~~
 or browned -

49 - Unwashed Lamp ^{J. F. Ott}

Chloride Ammonium

Dances & volatilizes in
Lamp with Kerosene Lamp
but doesn't hurt vacuum
in least

filament dead black
too much frosted

no good

8/24/86/

Re 49

V	amp	Res	Watts	Lamps	Q.P.
117	.74	158	3849	8.57	187" 16
149	112	133	6387	5.16	361 " 70

set
up - 20
min
70 - 7

Thumbnails lasted 60

8/24/86 No 54
 v- amp- Res- Fills- Lamp: C.P. 2
 H.P. - H.P. @ C.P.
 97- 78- 124- 336 2- 982- 157- 16
 127- 111- 115- 6238- 6229- 423- 80
 220 30 140 260 370 740 591
 ref- min- min- min- min- min- min- min-
 80- 80- 72- 64- 58- 48- 45- 44

Munns lasted 1060

64- Unwashed Lamp
 - J.F. 10/10
 Iodide Potassium

Clamps clean- of Salt
 heated well by Kuroan
 Lamp work off easy
 bulb clear filament

Shinning

This Lamp is returned as
 54- Three Gang two 54-
 but think it is 64-

Not a bit of blocking

There is a light brownish
 coloration like the 52 hour 80Cp
 Lamp filament block- clamps
 Nicodurally clean-

This is on right track & probably
 due to fresh Iodine given off
 when K9 heated-

62 - Unwashed Lamp ^{2 500s}

Permanganate Potassium

arcd - several arcs
formed in Lamp
before one jumped

No Corrosion
Busted

60 — ^{J.F. 11th} unwashed lamp

Cyanide Copper

globe browned

Considerably hard

to get off — spot in

it — filament

Browned one side

clamps clean

8/24/86/ A⁰ 60.

15 — amp — Res — Filts — lamps C.D.

105, 73 — 144 — 3406 — 9.70 — 105 " 16

137 — 105 — 130 — 6371 — 5.18 — 414 " 80

act 20 50
up — min — min
80 — 72 — 58

No clock only
yellow — one side
filament moderately shining

Mumukh's lasted 50

59 - Unwashed Lamp
J. F. M.

Oxalate Copper -
film + browned
slightly on side
became high for $\frac{3}{4}$ hour
globe clear - one clamp
yellow like gold
other not very clear

7/24/86/ No 59
v - amp - res - 7 lbs - 4.8 - 4.8 @ C.P.
100 - 79 - 127 - 3495 - 9.44 - 157 " 16
130 - 112 - 116 - 6459 - 511 - 409 " 80

ret. 20 50 80
up - min - min - min
80 - 72 - 66 - 58

and in 125 minutes.

57- Unwashed ^{J. S. 1846} Tartrate

Tartrate Antimony
Impossible get vac
after 2 hours
and

OK

Trust

^{J. S. D. H.}
36 - Unwashed Lamp

Litterage

globe clear - filament
ok - had take it
off pump rather
quick power stop.
Lamps clear -

8/25/86/ 110, 56
v. amp. - Re. Filts - Lamp - G.P.
105 - 75 - 140 - 3495 - 9.44 - 151 - 16
136 - 105 - 129 - 6326 - 5.22 - 98 - 80

set 20 40 60 120
up - min - min - min - min
80 - 74 - 66 - 62 - 48

Moderately
black globe

Thumbe last lot 140

53 Anewasho Lamp ^{J.S. 186}

Acetate Alumina

yellow residue - globe

clean clamps ditto

filament browned

Gold Seals - distated

8/24/861 No. 53

V-amp	Res	1 lbs	Clamps	O.P.
III - .70	- 158	- 3457	- 9.57	- 158 " 16
144 - 1.04	- 141	- 6769	- 4.88	- 890 " 80

set
up -
80

Ac'd in 10 minutes.

acd

8/24/86/ 11.0 58

5 - amp - Res - Filts - lamps - C.P.
H.R. - H.A. @ C.H.
101 - 70 - 144 - 3141 - 10.52 - 16.5" 16
130 - 1.00 - 130 - 5757 - 5.74 - 45.9" 80

act - 20 50 140

up - min - min - min

20 - 40 - 38 - 30

At 50 min. deep, close blue on + clamp

Arise in 185 min.

^{J. S. M.}
58 - Unwashed Lamp

Chlorate of Potash
globe clean one clamp
black other not clean

Chlorate Melted -

Came off hard -

slight brown on globe
near clamps

one side filament
browned near clamps

53 - ^{J.F. Mo} Unwashed lamp

Arsenide Cadmium

too much in globe

blackened absolutely
opaque - ng

Printed

82 - Unmarked Lamp

Cinnabar - arcd -

Prusid

70

Unwashed Lamp

Mercuric oxide

acid on pump

54 - Unwashed Lamp
J. F. 8th

Metallic Tin - powder
white. Volatile matter
comes off - very little -
air comes off - globe
white except at angle
incandescence then little
blue only. Works splendidly
on pump filament
bright both sides
Calbin perfectly strong etc.

8/25/86/ No 542
V - Amp. Res - Filts - Lamps - C.P.
104 - 79 - 132 - 3650 - 9.04 - 148 - " 16
135 - 113 - 120 - 6780 - 4.89 - 591 - " 10

2nd 40 130 300 450
up - min - min - min - min
80 - 72 - 50 - 42 - 37

Minibus tailed 600.
pretty black

69- Air Washed Lamp

Nitroprusside Sodium

globe little tinted

filament not perfectly thin
J. S. 11th

8/25/86/ No 69

V	anip	Ra	Flts	amps	O.P.	C.P.
106	-	76	-	140	-	35.75 - 9.25 - 198 " 16
137	-	110	-	125	-	6675 - 4.94 - 395 " 20

set	40	130
up	min	min
80	80	58

Wounds - lashed 150

more than reg
flocking clamps
clean -

68 - Unm. Led Lamp
J.F.D.H.

Tungsten Soda
blu Bulb clear Carbon
shining - comes off easy
clamps clean -

8/25/86/ A.D. 68

V. amp - Res. Title - H.A. H.R. @ C.P.

100 - 72 - 1.33 - 3190 - 10.35 - 166 - 16

130 - 1.02 - 128 - 58 2/3 - 5:02 - 450 - 80

224 40 130 300 440 694 907 1130

up - min - min - min - min - min - min

80 - 72 - 56 - 48 - 42 - 36 - 34 - 32

Mum to tasted 1190

Lamp about regular block
clamps clean
fil lead block

75 Unwashed Lamp

Lead Chloride ^{J. F. Dille}

Iridescent works well
on pump very little
of any Hg blue -
globe whitened somewhat
Clamps clean - flint
apparently shining, both
sides -

8/25/86. 11-0-73-

V-Amp	Res	Flts	Lamps	C.P.
113	71	159	3550	9.29 - 149 " 16
149	144	144	6265	4.81 - 385 " 80

set 40 10
up - min - min.
R - 74 - 66

Iridescent
not much
blinking

Murphy's lasted 8.5 -

81 Unwashed Lamp g. 5.00
 Hydrabromate of Ammonia
 Volatilizes before heated
 with Kerosene Lamp -
 Cant do anything with
 it - faint moderate
 shiny - clings dirty

8/23/86 11⁰⁰ 81.

v - amp - Ro - 7 lbs. Lamp - C.P.
 98 - 74 - 133 - 32.25 - 10.23 - 164. 16
 128 - 103 - 125 - 59.00 - 5.55 - 444 " 80

act 40 100
 up - min - min.
 80 - 56 - 50

Minutes last test 120.

74 - Unwashed Lamp

Carbonate Lead

almost impossible get
Vac Lamp clear -
Champs clear filament
blocks -

8/25/86 11⁰⁰, 74.

v. amp. Res. Fills. Lamp @
H.P. - H.P. @ C.P.
12F - 63 - 203 - 3375 - 928 - 148 - 16
149 - 78 - 192 - 5130 - 641 - 208 - 40

set 40 130 340 450
up - run - run - run - run
40 - 44 - 46 - 40 - 36.

Munich tested 540.

less black than ordinary
white in spots - clear
clear J.F.O.H.

67- Unwashed Lamp J.F. Ott

Arsenias Patosh -

bulb tinted - flint

block - ~~was~~ blocked

yet while on pump
hard to get off

8/25/86. No 67

v- amp- As- 7 lbs. lamp a.p.
107- .78 - 138-3700- 8.92-143 " 16
138- 1.14 - 121- 6970 - 4.73 - 378 " 80

set 40. 139
up - min - min
20 - 82 - 86

Mounts lasted 180

Blocked about Regular
but not dead block

7/20/86

No. 73

V-amp-Rs-7 lbs- lamps C.P.
 100-78-129-5465- H.D- H.P @ C.P.
 180-110-118-6550-5:20-103- " 16
 225-40-150-300-430-690-930-1150
 24- min-min-min-min-min-min-min-min
 30-74-56-52-46-38-32-32

1600-1960-2190-2490-2695-3350-3610
 min-min-min-min-min-min-min-min
 31-30-28-26-25-20-2

Minim. basket 3785-

Pretty black clamps not
 very clean - the block has a
 yellowish tinge, think great
 deal of it due to dirty effect
 of movement of the loose lamp
 block. Vae good -

73 Unworked L

J. F. 1886

Lamp block

Comes off easy 8057

Clamps mod clean

filament shining
 globe tinted little probably
 from lamp block little
 yellow in narrow part globe
 probably a Hydrocarbon from
 lamp block

66 —

J. F. 0116

Acetate Lead

No good too much water
burst in g —

Busted

80

j. s. 11th

Sulphate Ammonia

Too much water in it
very busted and

-PT

P(25)86. No 79
 v-anop - Res - 7 lbs - clamps
 98-50-123-5475-950-152
 126-114-111-6075-511-414
 100-60-230-580-620-580-1050-1650
 20-80-64-52-42-41-54-52
 Minutes - lasted 1900

quite black - but dead black
 Clamps clean

79- Unwashed Lamp
 Ferrocyanide Potash
 bulb clean clamps
 clean - filament very
 slightly browned lower
 part one side -
 browned high for over $\frac{1}{2}$
 hour -

globe not nearly as
 black as it ought to be
 for this life - filament
 dead black - Clamps clean
 J. F. Webb

72

J. F. Webb

Bichromat ammonia
 Bulb clear impossible
 get rid air - salt
 swells up enormously
 & continuously gives off
 air - felt
 dead block - burned &
 3/4 hour in pump

8/23/86/

No 72

V- amp- Res- Fills - Lamp C.D.
 111- 81- 137- 3990- 827. 133. 16
 142- 112- 127- 7050- 468- 324. 80

21- 60
 46- min
 80- 20

Lamp ordinary
 blackened bulb

Minutes last 110.

86

J.F. D.H.

Songy Platinum
 globe faintly tinted -
 little browned in narrow
 part - filament even but
 not perfectly shining
 wks easy on pump
 clamps clean -

4/25/86

Wk 86

N. - amp - Ro - Hds - ^{lands} C.P.
 102 - 78 - 131 - 3525 - 9.36 - 150 - n-16
 132 - 112 - 118 - 6550 - 5.04 - 403 - n-80

Set	60	230	380	620	870
4 1/2	min	min	min	min	min
80	77	56	48	38	35

Minutes lasted 1030

globe very black
 fil. d. black
 clamps clean

unwashed J.F. 11th
83- Iodine - about 2 milly

whitened near clamps from
formation white Cu
filament shiny globe
clear wks very easy
on pump - No blue in
globe - fall tube not
stopped but deposit
takes place -

8/23/86 No 83-

V- amp. Res. Fills. Lamps C.P.
H.P. H.R. @ C.P.
99. 75 - 132 - 8300 - 14.00 - 160 - 76
128 - 105 - 122 - 8945 - 5.08 - 444 - 80

ret 90 110 260
up - min - min - min
80 - 76 - 71 - 60

globe slightly
blackened or rather black
brown - filament black
clamps clear
quite white as clamps

Mmuli last lot 410

8/23/86

No 78

1 - amp - Res - 7 lbs - Lamp C. 2
 100 - 50 - 125 - 3550 - 929 - 149 - 86
 150 - 114 - 114 - 8460 - 572 - 410 - 50
 def 40 110 260 580 760 940
 up - min - min - min - min - min - min
 80 - 76 - 64 - 58 - 48 - 40 - 35

Mumukshu - 1325

Globe rather black
 Love clasp clean other
 Carbon black - fil dead
 black -

78

J. 5. 1886

nothing in globe

but there are about 2
 milligrams Iodine in
 among phos anhydride
 in Cup - want to see
 if Lamp get blue -

Lamp free of blue
 works off Beautiful
 hardly any air clamps
 dull brown filament
shining

84 —

J. F. O. H.

10 grammes Selenium
 globe gives most beautiful
 coloration I ever saw —
 clamp lead color —
 wks easy on pump —
 no blue — filament
 slightly browned one side

8/25/86/ No 84.
 v- amp- Rio- 7 lbs- 4.2- 4.2 @ 0.10
 112- 80- 140 3975- 8.30- 133 " 16
 148- 116- 128- 7600- 4.34- 847- 80

set
 up
 80-

Selenium further
 Valabry to deep red

Mum. is lasted 10

8/25/84

No. 65

N	amp	Res	Atts	Lamp	L.P.
				H.P.	H.P. & C.P.
108	72	150	3445	9.59	153 -- 16
139	104	134	6400	5.15	412 -- 80

Set	no	110
4	min	min
80	92	70

Minutes lasted 130

globe more
than ordinary block
didn't get H₂ out
I guess -

65-

J. F. Ott

Nothing in globe
put on pump when
there are 2 milly
Godun - Phos ^{cup}

Hg blue in globe - Godun
probably got covered
up - globe clean
clump rather clean
faint little
darkened -

8/23/86

N^o 94

V- amp - Pas - Tills - Lamps C.R.
 102 - 74 - 138 - 3358 - 985 - 158 @ C.R.
 132 - 103 - 127 - 6025 - 544 - 458 " 16

24 40 110 260 520 760
 7 min min min min min
 80 - 90 - 74 - 64 - 44 - 38

Mmms lasted 820

Brownish black - about
 regular amount
 clamps slightly dirty
 filament bright from clamps
 to $\frac{1}{2}$ inch up on side that
 broke -

77

J. F. W.

nothing in Lamp -

new pump with 2 gram
 iodine right on top
 phos anhydride - Cup
 no blue in globe - little
 whitened near clamps
 clamps show no tendency
 to melt run filament
 way up above regular
 clamps not clean
 filament perfectly shiny
 works as easy no air
 at least hardly any after
 red heat & then very little.

8/26/86

No. 83

V. amp. Bo Hills Lamp C.P. @ C.P.
 107-72-149-3406-270-155--16
 138-103-134-6282-525-420--80

Set 30 60 90 120 180
 4h min min min min min
 70 80 78 72 68 58

Minutes lasted 350

Globe black clamps
 moderately clear & fil
 block.

83-

J. F. Ott

Nothing in Lamp - put
 on drier for 20 minutes &
 heated - then put on pump
 with piece iodine about
 2 mg on top phos anhyd
 in Cup - globe clear
 no blue - can run
 filament up very high
 without fear melting
 Clamps - filament
 shining - clamps
 not cleaned

Dried in drier with heat
then taken off and a solution
say 20 drops of Gasoline
with Iodine dissolved in it
poured in lamp while hot
& put on pump -

It worked very easy scarcely
any air came off got a vacuum
in few minutes, but on allowing
it to turn air came out -
also notice faint blue halo
on clamps although globe
white white & free from blue;
Strange to say while the globe is
white at high Cp. The blue halo
shows Mercury strong - may be
decomposition of Iodide of Mercury
decomposed & then recombined -
clamps gradually become clean
showing either H or Cd -

Blue in globe clamps cleared
filament shining
burning $2\frac{1}{2}$ hours at 30
Candles - slight browning
of globe - the shine is not
perfect on filament but

even all over -

8/26/86, A_{10}^{10} 71
V-amp-Ro-Filbs - lamps O.P.
96 - 78 - 124 - 3325 - 9.98 - 109 - 16
125 - 109 - 115 - 6030 - 5.45 - 436 - 80

set 30 60
up - min - min
50 - 78 - 72

Mumdis lasted 200

globe black more than usual
for this life - one side fil
brown other dead black
Clamps clean -

109

8/26/86 A_{10}^{10} 109
V-amp-Ro-Filbs - lamps O.P.
94 - 72 - 115 - 3425 - 9.64 - 154 - 16
124 - 115 - 108 - 6325 - 5.22 - 44 - 80
set 30 60 290 470
up - min - min - min
50 - 50 - 44 - 53 - 48

Mumdis lasted 200
Brown black globe -
Clamps clean

109-

J. S. 11th

Put in drier with heat
taken off + a stronger solution
of Iodine in Gasoline poured
in hot globe - it started it

works same as 71 - except
by running up very high it
flushed in blue - then blue
came in for some time
Very small quantity air
keeps coming off at about
30 Candles but stops when
at 100 Candles - $\frac{1}{2}$ hour
+ air comes out burning at 300p
on running it up blue comes in globe
strong showing not enough Iodine
blue in globe but not much except
high heat - Green burning
2 $\frac{1}{2}$ @ 3 hours at 30 filament
shiny + absolutely untoned
on chain clear + also untoned
globe started - air was practically
stopped although now other a microscope tube
attached

8/26/86 W₉ 96

N - amp - Re - Fills - lamp - CP
 103 - 77 - 134 - 34.95 - 9.44 - 151 - " - 16
 135 - 108 - 125 - 64.59 - 5.11 - 409 - " - 80

Set	60	150	210	390
24 min	min	min	min	min
80	67	56	54	48

Minutes lasted 610.

Brownish black
 moderate
 one clamp. clean other
 dirty fl did block

96 -

J. F. Ott

Lamp not put on driver about
 1/2 thru full 90 deg
 Gasoline put in globe &
 put on pump with inside
 all moist with the liquid.
 This lamp has blue in burned
 3 hours at 30 CP without
 absolutely clear tube - then
 I put it up for 20 minutes
 to about 100 @ 125 - CP
 filament shiny - globe
 very faintly tinted brown
 one clamp clean - noticed
 when I pulled peg one clamp
 white hot - other clamp
 untouched. Wire on
 inside part broken but fixed
 rather shakely manner -

9/26/86.

91

15 - amp. Res. - 1111 - 1112 - C.P.
 98 - 74 - 133 - 3225 - 11.23 - 164 - 16
 27 - 108 - 118 - 6075 - 5193 - 454 - 20

act. 50 80 50 520 961 1350
 up - min - min - min - min - min - min
 20 - 78 - 68 - 49 - 42 - 34 - 31

Mon. 1st 1500.

Yellowish black (very moderate)
 in globe fil dead black
 Clasp. Clean

91-

Unwashed - Undried Lamp

put $\frac{1}{4}$ of size pin head Iodine
 in globe — when sold
 tube obtained piece had
 disappeared — blue in globe
 showing not enough

Iodine — probably some
 reaction with water
 used it all up as the
 lamp was undried —

blue in globe but no
 air out as in those

that are not blue —
 This also had a hole that
 filled the whole of narrow
 neck of lamp —
 filament thing didn't
 reverse current clasp
 not cleaned — globe clear

J. F. O'H.

826/86/ No. 108.
 V- amp - Res - Fths - ^{amps} O.P.
 112 - 78 - 131 - 3525 - 9.36 - 150 - n - 16
 182 - 112 - 118 - 6530 - 8.00 - 410 - n - 50
 set 30 - 80 - 340
 up - min - min - min
 30 - 80 - 74 - 60

Munchis lasties 400.

globe regular black
 no brown clamps
 unchanged fit lead
 black -

108 - unwashed - undried
 J. S. 11th

Put in $\frac{1}{2}$ pm head - Godwin
 put on one of the pumps that
 previously has 2ohm in
 Little blue in globe of globe -
 & heads of 184 -

Very blue - globe clear
 filament bright - very
 slight brown near clamps
 clamps unchanged -

8/26/86 No. 99
 8 - amp - Res - Filts - Clamps - O.P. - H.P. - H.P. - O.C.P.
 105 - 50 - 132 - 3725 - 3.86 - 142 " 16
 134 - 117 - 110 - 7150 - 4.61 - 369 " 80
 rest 30 50 340
 1/2 min - min - min
 80 - 78 - 70 - 60
 Muntz lasted 410

globe dark but it is
 nearly brown
 clamps clean - fil
 dead black.

99 - Unwashed - Undried
 J. F. 100

Full pin head of Podini
 put on pump when Podini
 had been before -

no blue or halo - no after
 air - Clean tube Comes
 off quick little white
 deposit down near clamps
 clamps dirty or rather
 unchanged from original
 took lamp off in 15 @ 20
 minute - filament
 bright -

8/26/96

10/10

V-camp - Rio - Hills - Lamps on
 98 - 78 - 126 - 3350 - 985 - 108 - 16
 128 - 113 - 118 - 6420 - 374 - 411 - 20

ret - 30 50 540 520
 14 - min - min - min - min
 60 - 78 - 69 - 48 - 35

Minerals lasted 765

Brown & black

Clamps clean feel dead
 black

110 - unwashed

J. F. M.

Dried in drier without heat
 1/2 to 3/4 per head Iodine put
 in globe - put on pump where
 there had been previously a very
 slight amount Iodine -

notwithstanding, considerable
 Iodine & slight whitening
 near clamps globe is
 blue - must be there is
 Hg in drier & the quantity
 Iodine is insufficient to

Satisfy the whole -
 the pump tube shows only small
 quantity of Hg - on running
 up high clamps show tendency
 melt - very blue -
 globe I think I slightly heated
 little whitish redness near
 clamps - shining -
 the clamps clean other dirt did not
 remain -

106- dried without heat on drier
put couple Crystals Iodine in
drier -

Put big gun cap full of
Iodine in globe & put it
on one of the old pumps
which is very much coated
in fall tubes with Hg -

J. F. M.

8/26/861. - No. 57
 V - amp - Rio - 2 lbs - C.P.
 H.P. - H.P. & C.W.
 189 - 75 - 146 - 3625 - 211 - 146 - 16
 140 - 104 - 134 - 6950 - 512 - 420 - 80

act 30 60
 up - min - min
 W - 82 - 74

Minutes lasted 270.

globe brown black
 more than usual for
 the life - Clamps red
 fit dead black -

87

Unwashed or undried -
 J.F. 186

2 few heads Iodine -
 put on pump with bulb bet
 phos Tube & fall tube to
 stop formation of Hg₂ in
 tube & lamp worked well
 & quick no blue no halo

Iodine all disappeared -

It is remarkable that from
 the time of putting first plug
 - until put the whole 150
 Volts across not more than a
 gun cap full of air showed

There was no after dis either
 as in those lamps which show
 insufficiency of Iodine -
 beautiful iridescence near
 clamps - filament unbranched
 clamps not dirty still clean
 but very dull & redish

whitish deposit on inside part near
 clamps where part of it has cracked the part
 cracked off is white other part appears as
 is coffee deposit or acid fumes

as it must have got - the crack
on close inspection the film
although even is not very
shining probably it was not
so originally - The underexposed
by transmitted light is brown
one of the clamps is Chocolate
colored or ochre color

98 - Unwashed in ^{Sol} ~~Sol~~
J. F. Lth

2 milligram Podophyllinum

Heated with Kerosene Lamp

Everything thing same as

93 - works & looks same -

26/86

44 98

W - Amp. Res - ^{Lamps} ~~HP~~ - ~~HP~~ - @ C.P.
102 - 77 - 133 - 3475 - 950 - 152 - 16
132 - 112 - 118 - 6550 - 504 - 403 - 80

Set	60	125
4 1/2 min		min
80	66	62

Minutes lasted 2.55

Globosey block
clamps clean
film not dead black

8/27/86 No 94
 25-amp- Res- Filts- Clamps C.P. @ C.D.
 114- 74- 154- 3740- 8.82- 141- 16
 148- 115- 141- 6885- 479- 383- 26

set- 40 40
 115- min- min
 10- 78- 69

This is 94
 not 97

Minutes lasted 175-

Only light Brown
 No block - Clamps dirty
 filament dried block-

97- Unwashed & undried

5 milligrams Iodide Potassium

Heat with Kerosene Lamp

Everything same as 93
 in working on pump etc

8/26/86 No 97
 25-amp- Res- Filts- Clamps C.P. @ C.D.
 103- 75- 138- 3425- 9.64- 154- 16
 132- 107- 124- 6250- 5.28- 422- 80

set- 60 125 305 175 135 1565
 115- min- min- min- min- min
 10- 74- 65- 64- 33- 28- 80

Minutes lasted 1450.

Globe very block - fil block
 Clamps clean
 J.F.O.D.

95-

Unwashed - Undried

10 milligramm Potide Potassium

Test with Reichenberg Lamp

Works exactly as in 93

Everything same

G.F.V.

826/86 No. 93
 v- amp- Res- Filt- Lampy C.D.
 104- 76- 137- 3500- 943-151 " 16
 136- 115- 118- 6925- 976- 581 " 8
 set 69- 125- 585-
 ref- min- min- min-
 20- 6F- 57- 45-

Munich's tested 620.

Globe day block clamps
 chain fit dead block

93. Unwashed undried

15- Mulligan Tode Potom
 heat with Kerosen Lamp

Blue on globe - large area
 beads - clamps cleaned
 appear to work regular

Except there is a surprising
 small amount of gas comes
 off at high or even low heat
 not a gun cap full from the
 1st peg - Worked it up
 slowly peg by peg - reversed
 cannot globe clear -
 filament shining just off

8/26/86 NO 88
 v-amp - Res. - 11 lbs - 11.2 - 11.2 @ 2.10
 10.6 - 77 - 135 - 5625 - 9.11 - 146 - 66
 137 - 107 - 125 - 6495 - 5.08 - 416 - " 50

all - 20
 p - min
 8 - 4

20 min. bright spot in center

Mercury faded 40.

globe white filament
 dead block -
 clamp black.

88 - unwashed standard -
 j. 5.08

put in about 10 mg Potassium
 then about 10 grams of
 Phos Arby in globe -
 Some of phos & K9 come in.

Contact turned yellow -
 think there is a chemical
 reaction for may be phos &
 PK + free Potassium - portion
 of Phos Arby & K9 don't touch

~~shall heat with lamp~~
~~not heated~~ on heating
 great reaction took place
 probably Potassium came off
 fall tube clotted -

globe still browned - no
 blue - globe or halo - vacuum
 may not be perfect as a sealing
 off there was some stuff in the
 contraction - clamp didn't
 filament shining work off
 easy

104 - Unwashed J.F.H.

about 10 mg phos anly
in globe & 5 mg of Iodine
on NO 12 pump with double
Cup one containing nearest
Lamp phos anly other
mercury - better to absorb
Iodine & prevent it going
into full tube -

Phos anly nearly all melted
Iodine probably all went
in Cup as even better than
didn't stop it & it went into
full tube - probably all went
out of lamp or was absorbed
by phos anly as it has a peculiar
color - the globe was blue
& had holes - near clamps.
there is an evidence of a
reddish film - moderately
shiny - globe slightly tinted
than before has bad spots at

8/26/86 / No. 104
V-amp - Res - Filts - Lamp A.D.
H.P. - H.P. @ C.D.
113 - .78 - 145 - 3910 - 8.04 - 135 - 16
146 - 1.10 - 133 - 7125 - 4.63 - 070 - 80

set
up
80.

Used in 3 minutes.

Broke one Lamp
Dont know No -
think its one with
Godide R in -

8/27/86 No 76
 v- camp - Rio - 7 lbs - sample 2.12
 108 - 75 - 144 - 8620 - 9.17 - 144 @ C.P.
 190 - 108 - 150 - 8750 - 4.92 - 324 " 80

act 40 90
 ref - min - min
 20 - 76 - 66

Munko tasted 190.

block of lake -
 Camp clean - for
 dead block -

76 - Unwashed - Undried -

about 10 C15 - Milligram
 Bromide Potassium -

Scarcely any blue - slight
 blue halo - scarcely any
 air works off easily
 globe faintly opalescent
 Clamps clear
 filament shining -
 J.F.H.

89 - Unwashed Undried
5 @ 7 Milligram Bromide
Potassium -

102 - Unwashed & undried

5 @ 7 Mecklenburg Chloride
Copper -

Oxidized a pump -
didn't heat Chloride
Enough -

90 - Unwashed and dried
10 @ 15 Milligrams Chloride
Copper -
Couldnt get it off too
much chlorine -

Printed

8/27/86 Wg 92

V	Comp	Res	Filts	Lamps	C.P.
108	77	141	3690	8.94	14.8 @ C.P.
138	106	130	6415	5.70	11.16

Set 40 90
 4h min min
 80 80 72

minutes lasted 155

globe white brown
 no black - almost opalescent
 Cant see fil to see color

92 - Unwashed - Unwashed -
 2 @ 3 Milligrams Chloride Copper
 globe turns yellow
 Chlorine comes out
 in great quantities +
 deuter pump -
 Can work it -
 probably an infinitely
 small quantity of
 Chl or might work -
 filament shining
 J.S.H.

105- Undried Amur-sha

5@8 Milligram. Potide ammonium
Palatizes badly globe
opagely white -
filament dead black

Busted.

94 - Unworked Untried -

10 Milligramms Iodide Barium

No blue no halo - scarcely
any air comes off -

works quick - globe
faintly opalescent.

Clamps dark -

Card for 94 is where

97 is

J. F. Ott

8/27/86. No. 101

V-amp	Re	fills	lamp	C.P.	HP	HP	@ CR
108	75	144	3583	921	148	4	16
141	104	134	6503	507	406	-	80

Set 30
4 min
80 68

minutes lasted 80

only brown deposit
clamps clean
fit dead block-

101 - unworked unworked

1. Milligram Chl Copper
had to heat with Kerosen
dettes pump - a yellow
matter valatizes
globe has slight yellow
rust clamps dirty
filament shiny
J. F. 10/10

120 — dried & heated down stairs
~~Underside window~~

J. S. Ott

Iodide Zinc

Works. Easy just heated slight
by known but seeing it
I believe stopid slight
opaline globe white
fil shining —
Clamps. ochre color.

8/27/96 No 120
V-amp Res - Iths - lamp @ C.P.
110 - 56 - 145 - 3700 - 8.92 - 193 " 16
142 - 112 - 127 - 7050 - 4.68 - 374 " 50
act 60 globe brown black
up - min considerable for
80 - 80 short life fit not
dead black clamps clean
Minus lasted - 65

121 - Dried & heated down stairs
J. F. 11/15

one pin head chloride Cop.

Clear at first, then very blue
- globe no halo - reversed
beated with known - very
little air clamps within

8/27/96 K. 121
V. amp. - Rs - Fills - Lamp 8.0
H.P. - H.P. @ B.P.
111 - 75 - 145 - 3695 - 393 - 143 " 16
193 - 108 - 133 - 6895 - 4.82 - 388 " 50
set 60
up - min
R - 62

Minister basket 105

Brown block in spots
clamps clean fil deep brown

4/27/86/ 11⁰/12²
 V-amp: Res - 1111 - 1111 - 1111 - 1111
 97 - 89 - 140 - 2876 - 1148 - 1148 - 1148 - 1148
 126 - 89 - 128 - 5442 - 6.06 - 485 - 1148
 21 - 10.
 11 - 11
 10 - 70
 Wink's lasted 90

Brown black - fil
 black

122 - Dried & heated down stain
 J. F. 1111

Iodide Iron - 3 milly
 Considerable air - works
 fairly fil shiny -
 slight brown tint -
 Clamps dirty red -
 no blue.

123

Dried & heated down stairs

J. S. O. B.

Iodide Cadmium

3 mg —

just touched it with slight
heat from known Vatalized
exceedingly easy globe
Somewhat of descent clay
ochre red — no blue
film + shining

8/27/16

N. 123

v. amp.	Res	7th	amps	C. P.	@	C. P.
103 - 74	139	8375	9.71	184	"	16
124 - 104	128	6170	0.24	927	"	20

act.	60	125	2 40
mf	min	min	min
80	72	60	54

Brownish
black.
Clay + dim
pl. dead black

Mundis tested 495

8/27/86 No 129
 v- amp- Res- 7th- Lamp C.S. @ 0.1?
 104- 84- 141- 8420- 965- 154 " 16
 186- 106- 129- 6595- 576- 413 " 80
 set. 60 125
 of- min- min.
 80- 72- 56.
 Minute last set 410

124- Dried & heated down 3 times
 J.F.D.H.

Unslaked Lime 20 miligram
 Clamps not very clean
 reddish - felt - shiny
 very little blue - reversed
 current, scarcely any
 air - Splendid Vac
 felt vibrates 3/4 inch

Scarcely any blackening
 one blackened spot opposite
 break -
 Clamps reddish -

125- Dried & heated form stains
p. 5. 0th

8 milgram Idiform

Valalylze very Easy - scarcely
any gas comes from off-
globe slightly tilted, clamp
unchanged filament
seems to have a Hydrocarbon
deposit or it has not been
touched in slightest.

8/27/96

No. 125-

1- amp - Res - 1.1 lbs - 1.1 lbs
114 - 76 - 150 - 3845 - 8.38 - 137 " 16
149 - 114 - 138 - 7125 - 4.63 - 370 " 80

act. 60

up - min

80 - 64

Opaque
wired

Wumb's failed 65
wired

126 Heated & dried down stairs

20 Mg Iridiform pat.
a badly got all over
globe — J.F.H.

127/126 No. 127
 V-amp - Res - Filth - ^{knobs 8.2} H.P. 4.2 @ C.P.
 105 - 74 - 142 - 3401 - 207 - 153 - 16
 136 - 1.04 - 131 - 6238 - 5.29 - 923 - 80
 21 - 30 - 110 - 470 - 703 - 1070 - 1195 - 1890
 up - min - min - min - min - min - min - min
 80 - 76 - 75 - 49 - 46 - 43 - 40 - 37

Minnie's lasted 2110.

Bulb only yellow -
 much white deposit near clamps
 also a Copper deposit
 fil only deep brown

127 Healed + Dried from stain

2 mg Iridium -
 didn't heat globe at all
 heat of filament Volatilized
 it all up in neck clamps
 unchanged - no H₂ or carbon
 deposit + filament shiny
 straight - globe ~~etc~~
 tinted slightly -

J. E. M.

92586/ No 128
 V-amp- Res- 2 lbs- lamps a.p.
 100 - 11 - 141 - 3141 - 10.52 - 164 - 16
 130 - 100 - 130 - 5757 - 5.74 - 439 - 8.0
 (at 30 min.)
 121 - 133 - 91 - 7.74 - 4.66 - 5.41 - 4.16
 act 50 60 110
 mp min min min
 80 - 116 - 96 - 66

Therm to last 175

Lamp brownish white
 almost opaque -
 Not heated down stairs top
 filament shining white after
 part filament black

128 (H + Drive) D.S.

4 mg Id form J.F. 11/15

Not heated by Koven - all
 the Id form Volatilized in
 neck of lamp by heat filament
 no blue or halo - no tendency
 melt. Clamps unchanged
 filament Extra shiny prob all
 Hydrocarbon deposit fil
 straight. globe faintly
 tinted - scarcely any
 gas comes off.

8/27/84

50 129

2- amp. Res. - $\frac{1}{2}$ lbs - Pumps - P.D.

99- 70 - 141 - 3032 - 10.82 - 173 " 16

130 - 100 - 130 - 5757 - 5774 - 4594 50

ref. 30 110

$$m_2 = m_1 = m$$

80- 78- 60.

Miner's lasted 140

globe brownish black
/ Considerable for short
life clings and changed
fil not dead block -

129- Dried rat Dermis
J. F. M.

5 mg Iodide C heated it
slightly by Kerosene before
putting on pump. Did not
heat after -

Water easy hole but no
blue in globe - removed
Current, clamps
unchanged —

John H. Sherry
Globe St. N.Y. City

9/25/26 No. 130.

V	amp	Res	Filler	Temp	C.P.
10	55	144	35PS	9.21	147 " 16
100	607	131	6636	9.97	398 " 80

set 20 165
 up - min - min
 80 - 74 - 55

Thermis last at 165-

Clear yellow - iridescent
 fil blackish-white deposit in
 neck-

130 - J. F. Webb
 Dried, heated & cooled in Exhauster

Phos Aubry 10 gms - also tube
 of 9 deform - new pump -
 Phos Aubry seems dry in hand
 showing that Exhauster does P
 work well - filament
 seems oxidized while looking
 at it on the pump - white
 Color in globe colorless
 Phos all shrunk to viscous
 mass - I find 9 deform
 gives Chemical Reaction with
 Phos Aubry & that the
 Explanation of Sn - all quantity
 gas coming off - must
 know try other drying
 Materials such as Chloride Calcium
 Burnt Lime - ignited KO &
 NaO - also with Li K & Na
 also find Chloride Zinc -
 burned at 80 for about 1 1/2
 hours - globe - whitened & filament
 burned -

131 Andros - unwashed -

10 mg phos anhy $\frac{1}{16}$ X $\frac{1}{2}$ inch
tube filled with 2d form.
put in phos anhy got viscous
showing great amount water
- globe -

8/28/86 14 132
V- Amp- Res- Filt- Amp- C.P. @ C.P.
100 - 80 - 125 - 5589 - 9.32 - 149 " 16
130 - 112 - 116 - 6459 - 5.11 - 409 " 80
act 40. 165 275
mp - min - min - min
80 - 74 - 86 - 80

Mumli tested 485-

fil. drab block ~~brown~~
yellowish block in globe
Clamps clean -
indescence in narrow part
globe -

132-

J. F. Vth

No phosphorus in Cup -
heated & dried on Exhauster cooled
& taken off tube of Iodine put in
globe has slight whitening.
filament was silvery but after
heating Iodine decomposed &
large quantity of gas came off
but this was quickly
absorbed by the full tube
fall tube empty - The Iodine
Volatilized into full tube
before heating & at ordinary
temperature - The filament
is shiny but has lost
its silvery appearance -

8/30/86	11-2-1935	amps	C.P.	C.P.
V-amp-	Res-	11th-	11th	H.R. @
100-	75-	140-	5500-	7.43-137 "
136-	108-	126-	6570-	5.08-406 "
del-	30			
ref-	anti			
50-	76			

Minutes lasted 90

Pure block - but
more than there should be
for short life - clamps
rather clean but look
like burnt copper - fil
block -

133-

J. S. M.

Lamp put on drier & heated
then put quickly after it was
nearly cold on No 13 pump - this
pump had previously 9 lofom + phos
anhyd was little viscous on top
allowed it to run to solid tube
and then didn't touch it for
20 minutes put in first peg
run this way for 10 minutes
then in 10 seconds run it up
to 80 @ 100 candles for instant
pulled peg - and then for a
seconds turn closed it at 80
@ 100 cp very little air came
off at higher clamps are still
dirty lead. 8/30/86 - hold. after
working this way 20 or 30 times
during 10 minutes goes away
after it instantly ~~it~~ ~~is~~ ~~not~~
bright ~~it~~ ~~is~~ ~~not~~
clamps but extra clean

8/30/80

112/132

V-amp - Res. - Lth - Lamp - C.P.
 117 - 75 - 193 - 3380 - 927 - 148 " 16
 135 - 108 - 128 - 6600 - 3120 - 900 " 80

set 50 - 90 - 305
 75 - min - min - min
 80 - 80 - 64 - 43

Minutes last 380.

Very black for life
 fil dead black clamps
 Clean

134 - Lamp Andover
 J. F. Ott

Put on pump with no
 phos anhydride in cup
 globe very blue let it
 Burn for hour after
 working high air in very
 fine bubbles kept coming
 off continuously globe
 clear - filament considerably
 browned clamps
 most beautifully clean
 never saw them so clean

135- ^{J.F. 11th} Cleaned & washed regular
 Bichromk + SO₄ -
 rinsed then solution
 Chloride Zinc poured in
 then put on exhaustor +
 dried - put on pumps +
 exhausted reg way
 didn't heat with Kroy
 film + bright globe
 slightly browned -
 Clamps clean -

8/30/88 135-
 V- aniso- Res- 1116- Lamp 2.2
 103- 76- 136- 3475- 9.57- 132- 16
 134- 112- 120- 6650- 4.96- 397- 80
 oil 30. 40 305
 14- min - min - min
 80- 74- 63- 48

Mumms lasted 673-

Rather black - bluish ring on
 globe near clamps - clamps clean
 fil dead black

136 — Dried on Exhauster —
 put on Cup containing only
 burnt lime — air kept
 coming out for hour & 1/2
 five pin heads could get
 Vacuum filament ball
 browned globe clear —
 Clamps clean —

Dec 10/86 No. 136
 V - amp. Res - 7 lbs - Lamp 0.2
 109 - 71 - 154 - 5425 - 9.64 - 184 " 16
 142 - 105 - 136 - 6620 - 4.98 - 578 " 50

2.1 -
 0.6
 80 -

lasted 20 minutes

globe clear - fil browned
 Clamps beautifully clean

137- ^{J. F. Ott} unwashed undried
 Fine ferrocyanide K - globe
 Heated by Kerosum Exhausted
 quick put on cord & shaken
 while at 80 cp so ferrocyanide
 would touch & coat filament
 with KO -

8/30/86	11/2/87	amp	Res	CP	HP	HP @ 0.12
r-amp - Res - 71111s -						
104 - 23 - 143 - 3370 -		9.79	137	"	16	
134 - 104 - 129 - 6175 -		5.34	424	"	80	

set
 1/2
 80-

Minutes lasted 25.

Paul clear fil shiny
 one clump clump other dirty

8/30/88 / 14th 138
 V - amp - Res - Filts - Sample - O.P. @ O.P.
 143 - 73 - 142 - 5375 - 9.90 - 138 " 16
 132 - 102 - 130 - 5370 - 5.53 - 442 " 50

24p 30 180
 up - min - min
 80 - 78 - 62

Uranium Labeled 260



globe yellow - fil brown -
 clips clean

138 Unwashed, Undried -

Chloride alumina - heated
 by Kerosen. Chlorine Come
 off & great deal water -
 dirtied pump badly.
 finally got vac.
 sealed off & put on
 cord & shook lamp to
 get alumina all in
 Contact with filament
 while about 100 cp -
 globe rather clear
 filament little browned.
 J.F. Ott

39 - Unwashed undried

^{J. F. Ott}
Fluoridaleum in globe
beated & treated as ~~step~~

37 & 38 - flint blockhead,
or rather browned -

850/86

140 139

v- amp- Ro- ~~little~~ - ~~clamps~~ C.P.
107- 74- 145- 3620- 9.38- 100 " 16
138- 107- 129- 6845- 5.04- 403 " 80

24- 30 180
sp- mm- mm
80- 80- 52.

Mumukhi lasted 200

Rather blockish for the life
fil head block -
Clamps - dirty

140 Unwashed & undried
J. F. W.

Oxide Aluminum - globe
worked same as 137
+ 138 -

8/30/86 No. 140
v-amp - Res - Fth - ^{lumps} C.P. @ C.D.
96 - 77 - 123 - 32.50 - 10.15 - 162 " 16
125 - 107 - 116 - 89.95 - 5.57 - 441 " 80

act 30 150 870
mp min min min
70 68 - 50 - 38

Minutes - lasted 700-

globe faintly tinted black
Alumina clings to side
of globe & makes it white
fth black - all powder darkened

141 - unwashed undried

Silicic acid (re) oxide

Silicon - same as

137 & 138 - J.S.H.

	7/30/86/	11/2/91		
v - camp -	Res - Fills -	Camps	C.P.	
		H.P.	H.P. @ C.P.	
107 - 7/4 -	145 - 3320 -	935 - 130	"	16
138 - 116 -	131 - 6475 -	6.14 - 408	"	50

col. 30 180

7/4 - min - min

50 - 80 - 54

Minute last 210

globe little block fil
dend block clamps
clean.

7/7/861 No 142
 V - amp. Res. - Films - Lamps 0.52
 95. .77 - 12.9 - 32.50 - 10.15 - 162 - 16
 124 - 106 - 117 - 582.5 - 5.66 - 483 - 80
 set 40 140 240 575 575 675
 af min min min min min min
 80 - 74 - 66 - 58 - 46 - 48 - 38
 Minutes last lot 850

yellowish block -
 less than usual -
 fil black - Clamps clean

142 - Unwashed undried
 J. F. Ott

Telephone Lampblack soaked in
 Gasoline & then forced through
 neck of Exhaust tube in pump in
 cylinders - Lamp put on 13 pump
 worked without heating Lampblack
 probably heat of filament brought
 some HC out filament steel shiny
 after getting tube solid & running
 Current heated Lampblack
 with Kerosene Lamp - Exhausted
 to clean tube & run filament up
 got clean tube allowed Lamp
 run at 40 C for 10 minutes
 sealed off - Clamps show
 decided tendency melt.
 Clean - globe clear -

143 -

Same as 142 - film
 shiny on one side very
 dull brown on other
 Everything else same as 142
 J. F. Otto.

9/7/86	143	Temp	C.P.
V-amp - Res - Fllts -		U.P. - U.P. @ C.P.	
104 - .65 - 160 - 3000 -		11.00 - 176 -	16
137 - .93 - 148 - 5650 -		5.84 - 467 -	80
set 40			
up - min			
80 - 70			

Mimulus last at 105.

onesed coffin shiny other dead
 block broke on Dead block
 side - clamps clean ~~plate~~ about
 right amount blocking for life -

144-

Same as 142 - But Lamp
Globe heated by Kerosene
before working Lamp
Lamp clean & globe clean
one side felt shiny other
side very brown J.F.H.

9/9/86		No. 144	
V-amp Res-Fills -		Lamps	C.P.
		Hi.P.	Hi.P. @ C.P.
104 -	70 - 149 - 32.25 -	10.25 -	164 " 16
135 -	103 - 132 - 61.25 -	5.55 -	428 " 80
set			
up			
80 -			
Arc'd in 15 min.			
Lamp broke all to pieces.			

145-

Same as 144-

one side fil not so browned

J. F. Otto

9/7/86

No 145

V - amp - Res - Filts - Sample A.P. H.R. - H.R. @ C.P.

107 - 73 - 147 - 3463 - 203 - 10.8 " 16

138 - 105 - 130 - 6425 - 5.14 - 411 " 80

221 - 40 - 140

up - min - min.

80 - 75 - 56

Thunberg's Laid 240

globe darker than shaded
Clumps clean - fil dead
block -

146 —

Same as 142 —
film not very shiny
arc'd —

7/7/86 7/7/86
V - amp - Res - 7 lbs - 11.12 - 4.2 @ C.P.
106 - .72 - 14P - 3875 - 9.78 - 157 - 76
137 - 1.03 - 133 - 6250 - 5.28 - 422 - 80
set -
up -
80 -
Arc'd in 15 min.

J. S. M.

9/1/88

No. 147

v - amp - re - fills - lamp C.P. 4.12 - 4.12 @ 0.12
 108 - 71 - 108 - 3330 - 9.85 - 108 - 16
 142 - 100 - 142 - 6290 - 5:25 - 920 - 50

ref. 40 140 240
 up - min - min - min
 20 - 83 - 54 - 52

Munich's lasted 245-

fil drab block globe blocker
 then I should be clamps
 are clean other little dirty

147 - Unwashed Undried - J. F. 11/10

1/4 Thimbleful Telephone Lamp Black -
 heated with Kerosene while on pump &
 few inches of Vacuum - enormous
 amount of water comes off also
 great deal of fixed gases -
 after heating strongly nearly up to
 melting point glass & getting solid
 tube worked lamps up slowly peg
 by peg - reversed current -
 clamps at certain C.P. get white
 hot & globe very blue with Hg
 after getting up slowly to 20 cp
 or 30 - then run up rather quickly
 allowed Lamp to burn at say
 25-cp for 1/2 hour to get high
 Vacuum -

filament somewhat Brown &
 globe sucked in little
 Octamps very clean Vac good
 globe clear. Lamp block don't stick

148

Same as 147 -

one clamp clean other dirty
globe clean fil bright -

9/7/50		11/2/48			
V - amp	R -	Fllth	amps	O.P.	
			H.P.	H.P. @ O.P.	
108	.68	189	3250	10.15	162 " 16
141	1.11	140	6350	0.24	419 " 80
act	40				
up	min				
80	70				
Munich's tested 40					

globe darker than it ought
to be fil browned all over -
clamps clean - J.F.V.H.

149

Same as 147—

globe clear
very clean
shining

clamps
fil very

150

Same as as 147 —
globe clean clamps
clean fit shimming —

151

Same as 147 - but on
long contraction in Hg pump
globe clear. clamps.
dirty. fil shining

9/7/80 1 10/10/80
5 - amp - Res - 7 Lbs - 14.2 - 14.2 @ 0.10
107 - 72 - 149 - 3420 - 9.65 - 154 - 16
140 - 104 - 139 - 6430 - 0.12 - 410 - 80

set 40 140 240 375 575
10 - min - min - min - min - min
80 - 67 - 54 - 48 - 36 - 34

Munchi - latest 688

globe too black for life
Clamps dirty fil
Drd black - J.S. Ht

152 —

J. F. Lth

Same as 147 —
 globe clear — clamp
 not very clean — fil
 shining

1/7/86

A^o/152

V-amp. Res. — Filth — Lamp O.P. — H.P. — H.P. @ 2.0
 102 — 78 — 138 — 6350 — 9.85 — 138 — 16
 182 — 106 — 125 — 6200 — 6.32 — 926 — 80

Let 40 140 240 375
 up — min — min — min — min
 80 — 78 — 61 — 48 — 38

Munich label 920

Lamp bulb rather dark for the
 life — clamps dirty

9/7/86 110 153
 10 - amp - 124 - 8595 - 9.18 - 147 - 16
 130 - 1.18 - 110 - 6800 - 4.85 - 588 - 80

act 140 120 275
 up - min - min min
 80 - 80 - 66 - 54

Thumli last hot 7.30

fil black. clamp clean
 globe usual blocky

print 3

153 - unwaxed and dried -

Thumbliful telephone lamp block
 in side tube

J.F. 6th



Heated with Kerosene lamp very hot -
 pegged up slowly - reversed current
 ran them over 2 hours below 10 CP -
 run rather quick up to high CP -
 work easy -
 clamps clean fil shiny
 globe clean

154-

Same as 153.
fil shiny globe clean.
Clamps clean

J. F. Ott

155

Same as 153

fil shiny one clamp
clean other head colored
globe clean fil
distorted & nearly
touching glass J.F.H.

9/7/86 $F_{10} 153$
V-amp- Res- $\frac{1}{2}$ lth- lamps. O.P.
104- 72- 195- 3320- 994- 109" 16
135- 105- 129- 6295- 0.24- 419. 80
set 40 120 275.
of- min- min- min
80- 82- 58- 52

Wm. is tested 280.

fil brown block - globe too black
for life - one clamp clean
other dirty

156 —

Same as 153
globe clean fil shiny
clamps clean

157

Same as 153

globe clean fil
chug clamps

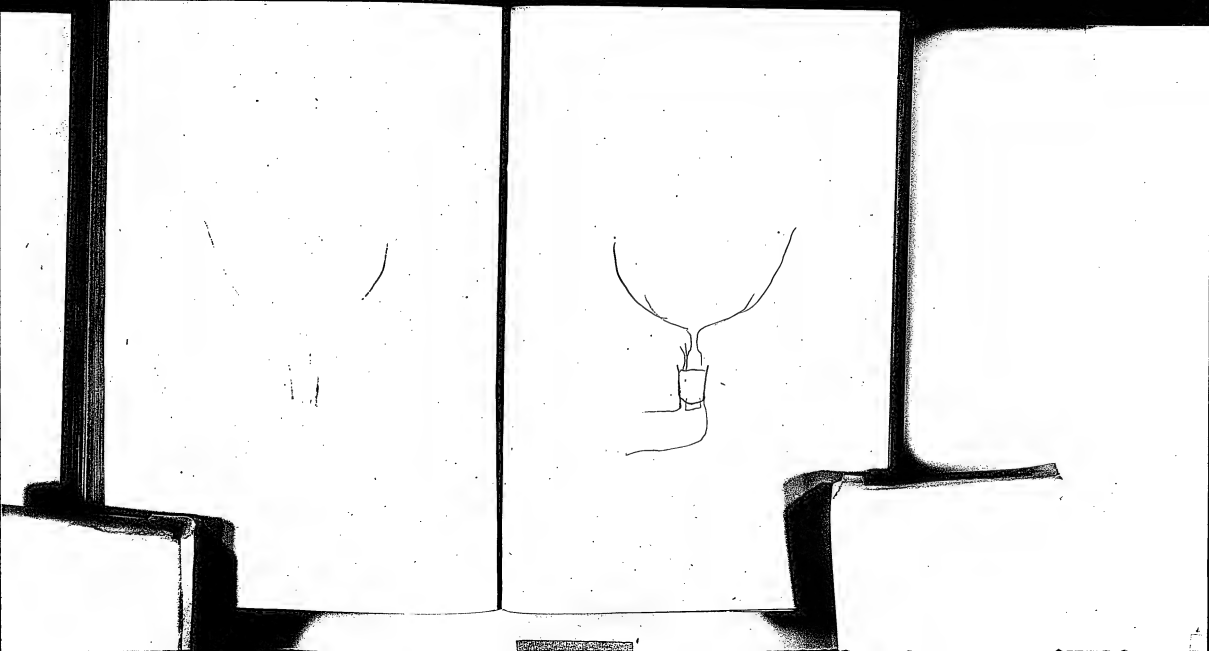
clean J.F. Webb

9/7/86 11-0 15-7
v-amp Res - 746 - 3362 - 9.82 - 157 " 16
100 - 76 - 132 - 3362 - 9.82 - 157 " 16
131 - 112 - 117 - 6500 - 5.08 - 406 " 80
set 40 120 270
of - min - min - min
80 - 80 - 52 - 42
Munk-label 330

Very black -
clamps clean
fil black

158

Same as 153



$$\begin{array}{r}
 139 \\
 188 \\
 \hline
 1112 \\
 1112 \\
 139 \\
 \hline
 261
 \end{array}$$

13

$$\begin{array}{r}
 1185 \\
 13 \\
 \hline
 3555 \\
 1165 \\
 \hline
 15203
 \end{array}$$

Lamp Factory Notebook, N-86-08-03

This notebook covers the period August-September 1886. The entries are by Edison, Mina Edison, and John F. Ott. The book contains notes, drawings, and calculations relating to lamp experiments. The lamps are numbered 1 through 80. Loose pages containing the results of lamp tests have been pasted onto many of the notebook pages. On the first page is an inscription by Mina Edison: "East Newark, Aug. 3rd 1886--Experiments on increasing the life of electric lamps." The spine is labeled "30." The book contains 203 pages numbered by an archivist.

Blank pages not filmed: 39-40, 47-48, 73-74, 203.

N-86.08.03

①

Left hand pages
numbered by N.R.S.
1964 Oct. 29



Cast Newark, Aug. 3rd 1886 -
Experiments on increasing the
life of electric lamps -

Mina Edison - Aug. 3/86 Tol
 Lamp No. 1 - ~~7~~ ⁵⁰⁰ ~~7~~ ^{Q. R. Keller}
^{Mr. H. Jones}
 Cleaned with bichromate of
 Potash and sulphuric acid
 hot, washed several times
 with ordinary water, then coated
 internally with Glacial phosphoric
 acid in a dilute solution of
 water, the water being evaporated.
 Leaving a thin film of trans-
 parent acid. The lamp was
 then exhausted and heated
 with kerosene lamp, high
 vacua obtained, vacuum
 broken, lamp taken off. Then
 put on pump again - Broken
 on the pump by accident.
 Mina Edison

5

Lamp No. 2 - ^{minia Edison} J. F. ^{Aug. 3/86}
^{A. R. Keller}
^{M. H. Jones}
^{For}
Same as lamp number
1 - except not previously exhausted.
Water kept coming off for a half
an hour and was decomposed
by the filament which was only
allowed to burn for a short period.
Finally got solid tube with
filament about eight candle-
power kerosene lamp burning. The
globe was very blue showing strong
mercury. This pump had mer-
cury drawn up into the
phosphoric tube and was not well
cleaned. One of the clamps melted
the carrying action being very strong,
probably due to the great amount
of mercury vapor. Lamp sealed
off. Shows slight tinge of
blackening. The shine is
partly off of the negative side
of the filament.
See record N's back of the page

⑦ 8/4/86/ N^o 3. Lamp -
 9 - Amps Res - 5.115 - Lamp C.P.
 112 - .67 - 167 - 3318 - 7.94 - 189 - 16
 147 - .96 - 103 - 6238 - 5.29 - 423 - 80

Set - 40 75 120
 up - min min - min.
 80 - 78 - 64 - 54

One lamp nearly melted off.
 At 80 C.P. shank hot.

Minister lasted 195

Lamp No. 3 - Miss Edison A.R. Keller
 J. S. Allen Aug 3/86
 Washed carefully with bichromate
 and SO_4 hot. Washed well with
 common water - Dried on hand-
 drier - No phosphoric film inside
 of lamp - Started at 1.135 -
 Heating bulb with kerosene lamp
 Perfectly solid tube at 1.19 - The
 pump is a number 13 - Bringing
 to dull red, only broke tube slightly
 Full yellow it broke considerably
 On high current breaking rather
 small. When side of the clamps
 was reduced large quantities of
 gas came off instantly. Tube
 could not be broken at 1.30 -
 allowed the lamp to burn for
 twenty minutes after the solid tube
 was obtained. The poles of this
 lamp were reversed to reduce the
 oxide on both clamps. Lamp
 very blue, large quantity of
 mercury vapor. Filament very
 much distorted. Shone nearly all gone
 from the negative side during the

(9)
Mina Edison
Lamp No. 3 continued - Aug 3/86
Twenty minutes burning - Built
Slightly tinged

J. F. Ott
A. W. Keller

8/4/86

No. 3

Tal

9 - Amps - Res - $\frac{1}{4}$ lbs - Lamp C. P.
99 - .76 - 129 - 3318 - 7.94 - 159 " 16
130 - 1.09 - 119 - 6282 - 5.25 - 420 - 80

24 - 40 70 120

up - min min - min.

80 - 76 - 62 - 48

Minutes lasted 170

Lamp No 4 - ^{Hania Edison} ~~g 50th~~ Aug 3/86
a K Keller ^{July} ~~TH H Doney~~
Cleaned with ^{July} Dichromate
and sulphurous acid (30%) - washed
well in common water, exhausted -
noticed very little air came off.
got solid tube - at high incand-
escence and clear tube the clamps
were not deoxidized - Filament
contorted badly - after not being able
to break tube broke vacuum -
Took lamp off & filled partially
with gasoline, put it back on
pump without drying it out, only
heated lamp slightly, the shine
was not off either side - current
was worked - did not keep lamp
at high incandescence over three
minutes.

Put it on pump at high incand-
escence - gas keeps coming off slowly
probably water that went in with
the gasoline - very little blue
in globe but blue hangs to clamps
clamps only partially cleaned - blue
gradually changed to a H of drogen violet

Continuation ^{Marya Edson} Lamp No 4 Aug 3/86
 The mercury ^{is} vapor appears to be
 much more on large pump than
 on singly lifting bottle. probably
 due to churning action of so large
 body of mercury. Small spectroscope
 shows Hg & H. Noticed that not-
 withstanding H. it does not reduce the
 blackening of the clamps. No CO lines
 of Hydrocarbon lines visible - small
 quantity of gas slowly comes off - Fil-
 ment being burning about 40 Carapal
 candles for 20 minutes - Clamps appear
 to be getting redish under influence
 of high current. In sealing it off.
 Sucked in and vacuum busted.
 Although the lamp has been burning
 40000 candles for three quarters of an
 hour the shine has not been taken
 off. except the clamps have a slight
 chocolate color; while I was sealing
 it small fine pin heads were still
 coming down in the mercury tube
 and the violet persistently clung
 to the clamp.

Lamp No 5- *India Edition at Koller*
 of 5th Aug 3/86

Washed by ^{100%} dichromate

and SO_4 , well rinsed in common water - Care was taken ^{not} to allow

SO_4 to touch the filament or clamps, it was also a stronger solution.

Surprisingly small amount of air came out a quick vacuum was obtained and scarcely any air came out on the high current. There was no blue at the clamp but the globe exceedingly blue with mercury vapor after obtaining a good vacuum and not being able to break up the tube.

I insured a atmosphere of gasoline in the lamp free from moisture by surrounding the stem and socket of the lamp with a sponge saturated with gasoline and then pulled the stem gradually and broke the vacuum. The gasoline vapor from the sponge rushing into the vacuum instead of air. After gasoline passed globe very blue but no blue at the clamp. after getting solid tube, it could

continuation Lamp No 5. ^{Amia Edison Aug 3/86}
 not broken up by heating ^{in the glass} the
 carbon - Allowed to run about
 five minutes at thirty candles -
 sealed off. Clamps only moderately
 tight. Globe not blackened -
 shell untouched - Carbon not
 much distorted -

ATKeller

It busted, or rather oxidized when
 set up in pump room probably due
 to suction of glass in sealing off
 pump - TAE

Lamp No. 6

Using Edison Gas

Aug 5/86

Washed with bichromate & SO_4

carefully rinsed - Dried on drier
 and put on pump - Got vacuum
 very considerable of air on lighting -
 Lamp very blue from H_2 vapor. Glo-
 went away almost instantly - Got
 clear tube, allowed lamp to burn
 altogether about 5 minutes at 60 C.P.
 noticed shine was somewhat touched
 on negative. Reversed poles.
 Clamps were not tight and clean -
 then put sponge to cup with gasoline
 and broke vacuum - Re exhaustion
 obtained quickly a vacuum which
 was scarcely broken up by heating -
 sealed off - Certain part of globe
 slightly tinted black dark - The
 shine seems now to be equal but
 not very great -

A K Keller

8/6/86

N^o 6

V - amp - Res - Filts - lamps C.D.
 99 - 80 - 12.4 - 3574 - 12.5 - 4.1 @ C.D.
 128 - 116 - 110 - 6574 - 9.42 - 157 - 16
 5:03 - 402 - 80

set 30 70 130 150 625 900 1115
 up - air - min - min - min - min - min - min
 80 - 80 - 70 - 64 - 50 - 36 - 30 - 29

Minutes lasted 1175

Filament & bulb moderately black
 or brownish black (10) the color is not
 pure black - vibrates good,
 I notice a few spots of phos anhydride
 on inside of bulb - probably flew up
 into lamp when broke vacuum.
 where phos anhy. is there is no black.
 Clamps dull.

Lamp No 7- Minia Edison Tal
 J. F. H. Dec. 5/86
 My 11/30/86

Cleaned with bichromate + SO_4
 then with distilled water. Heated
 on kerosine lamp + put on pump
 quickly - Sucked in the vacuum
 and broke -

a. W. Keller

as this lamp is burning all right - it must have
 been the part leading to the Exhaustion side
 that sucked in and not the lamp end of the
 Stem -

V	Amp	Res	Flb	Lamp		Tol
				HP	GP	
101	.71	142	3172	10.41	167	- 16
131	1.00	131	5795	5.69	453	- 80

Set up	30. min	70. min	130 min	250 min	625
50	80	72	61	48	36.

Lasted 860 min

Globe very black - pine block -
 Stumps dull

Lamp N° 8 - Minia Edison 708
 of 50 lbs Aug. 5/56 ^{14 1/2 lbs}
 Cleaned with Bichromate + SO₄
 then with distilled water - then dried
 and filled with a few lumps of
 phosphoric anhydride in the bulb -
 hanging for long time on the pumps -
 Remove the currents. It dimmed very much
 distorted, Lamps clean, shine only
 slightly taken off from one side - Burned
 at about forty candles for a half an
 hour - Phosphoric nearly all melted
 and ran on the globe -

8/6/56

4 - Lamp - Res - 4 tubes - Lamp CP
 106 - 73 - 145 - 3424 - 9.64 - 154 " 16
 136 - 1.65 - 129 - 6317 - 5.25 - 418 " 80

Set 30 70 130
 up - min - min - min -
 80° - 35 - 28 - 24

Filled with blue haze -
 at 80 min. blue on + clamps + clamps
 blackened -

Acc'd at 170 minutes -

So far all globes having phos anhy in
 globe give brown deposit like the long lines
 51 hours at 80 Lamp - This brown rolls off on
 breaking vacuum

Evidently if phos only could be got in
so as not to give off water & in exact
quantity scarcely any blocking
would occur - 728

Lamps 6% 9

Munia Edison

7 500 hrs. 5/86
 Cleaned this same as before

Cleaned with Bichromate and SO₂.
 then with distilled water. Exhausted
 on pump + then taken off by using sponge
 + gasoline, heated + gasoline allowed to
 run into lamp to clamps, then put on
 pump again and exhausted. Then
 taken off with sponge saturated with
 gasoline, put half tin of
 Phosphoric Anhydride in bulb.
 Did not stick to sides showing absence
 of water - Re exhausted. Then ^{very} slightly
 off of one side - Filament distorted -
 Phosphoric did not melt but ^{some of it} volatilized
 in the small end of the globe.
 A. K. Keller

8/6/86/

9- Amps. Res- 7.6 lbs - Lamps CP
 101 - 74 - 136 - 331.8 - 9.94 - 159 - 16
 122 - 104 - 127 - 6061 - 5.44 - 425 - 86

Set - 30 70 130 250
 up - min - min - min - min
 80 - 83 - 80 - 44 - 36

at 30 min + clamps blackened

Re'd at 300 min.
 Globe inside browned not blackened at
 vacuum broken this time cut off

Lamp N° 10 -

Jama Edison

7 500 Aug. 5/86 per
 Cleaned Richmond & S. O. 4. 105
 vacuum, broke it through sponge
 saturated with gasoline, put liquid
 gasoline in to get water out of
 Clamps - Re-exhausted and then
 broke vacuum through sponge, then
 put several lumps phos. anhydride
 they did not stick at all to globe
 showing no water - Put on pump,
 exhausted, heated lamp slightly
 with kerosene lamp - it volatilized
 Phos. anhyd. - Quick vacuum, after
 getting solid tube lighting filament.
 Scarcely broke tube, on reversing it
 did not break tube - no mercury blue
 + blue on clamps instantly disappeared

a K Keller

8/6/86/

7. Lamp. Res. Filts - Lamp CP.
 #11 #12 @ CP.
 105- .71 - 148- 8350- 10.00- 160 " 16
 131 - 1.00 - 136 - 6017- 5.48- 438 " 80

Del - 30 70
 up - min - min
 80 - 76 - 68

Arc'd in 110 minutes

Lamp No 11. ^{Maria Edison} J 5th Aug. 5/6
Charged lamp with ^{100%} ~~Richmont~~ ^{Richmont} & SO₂.
Got vacuum, broke it through
sponge saturated with Gasoline.
Put liquid gasoline in to get
water out of clamps - Re exhausted
then broke vacuum through sponge,
then put several lumps Phos. Anhydride
in globe - They did not
stick at all to globe showing no water.
Put on pump, exhausted not heated
with kerosene lamp - Pretty quick
vacuum - after getting cold tube
lighted lamp lighting filament,
scarcely broke tube - On removing
it did not break tube - No mercury
blue & blue on clamps instantly
disappeared - Don't seem to be any
gas come off when filament was heated
to high incandescence - The
heat of the filament volatilized
the Phos. The instant this took
place the gas ceased to come out
of the bulb. This presumably shows
that notwithstanding the presence

Hayes No 11 7250g ^{Aug 26/86} ^{minia mill}
 of Phos. Anhydride in the bulk.
 there is water vapor - But the
 volatilized Phos. instantly con-
 denses into - Both sides of filament
 shiny -

8/6/86

9. - Amp. - Res. - Fritter - ~~18 P~~ ^{Lamps} ^{CP} ^{HP} @ C.P.
 96 - .73 - 130 - 3053 - 10.88 - 173 - " 16
 124 - 1.05 - 118 - 5781 - 5.74 - 459 - " 80

Sit-
 up -
 80 -

Filled with Blue Haze

Dec'd in 25 minutes

The 11 Power

Maria Edison

Lamp No. 12- J.F. Ott Aug. 5/86
TAE m h Fr

TAE on h Free

Cleaned with ^{conc.} Bichromate and SO_4 - Then with distilled water. Hot vacuum, broke it through with sponge saturated with gasoline. Put liquid gasoline in to get water out of clamps - Re-exhausted - got vacuum, broke it with sponge. ^{Then} there put ^{very little} ~~some little~~ pieces of ^{about 100 grains} ~~some~~ of Phosphoric anhydride in bulb and a little in tube - The shine is very slightly taken off and seem to be equal on both sides - Very little gas came off, unless the current on clamp clean the other ash color - The filament straight - slight pallescence at the top of the globe of the phosphoric anhydride -

D. D. Keller

A K Keller

V	amp	Res	F.Lts	HP Lamps	CP HP	@ 6 P
98	.74	132	3145	1036	166	- 16
128	1.04	123	5884	5761	499	- 80

Lamp No 13 ^{Julia Edison -}
^{g. 5.00}
^{m. 7.00} Aug. 6/86.

Washed with bichromate & SO_4
 rinsed with common water afterwards
 distilled water. Clamps allowed
 to remain soaking for $\frac{1}{2}$ an hour
 in distilled water; bulb not dried
 but heated hot and put on pump;
 bulb heated with kerosene lamp
 while exhausting. Broke vacuum
 with sponge saturated with gasoline
 & put it on pump with cold water
 jacket, got rather quick vacuum.
 Globe has very ~~little~~ blue with Hg.
 notwithstanding water jacket probably
 due to pumps being connected with syst-
 em one day before use of cold water.
 Small spectroscope showed Hg & CO.
 Latter feeble: filament very much
 distorted. Burned on one side by
 electrical carrying - Bulb slightly
 tinted - Clamps clean - Did not
 reverse current -

Lamp No 13/ Mina Edison
J. F. Otto Aug 6/86 111 in Power

9. Amp. Res. 4. lts - Lamp @ P. @

98- .66 - 148-2876 - 11.48-184. " 16

127- .99 - 128- 5574 - 5.92- 474 " 80

Set 60 100
up - min - min
80 - 64 - 60

Minutes lasted 110

Lamp No. 14 ^{Mina Edison} Aug. 6/86
^{7.5.1886}
^{11.1886}

Cleaned with Bichromate
 and SO_4 - Common water and then
 distilled - Put on water jacket
 pump, still shows considerable
 Hg but not as much as previously.
 Sealed spark gauge off - Use castor
 oil in rubber - dried this lamp
 20 minutes on drier; Very consider-
 able gas comes off when filament
 brought up - Plenty of CO. & some
 decomposition of water - Rerused
 poles and worked filament so tube
 unbroken; Broke vacuum through
 gasoline sponge but did not take
 lamp off - run for another vacuum
 globe quite blue with Hg. - Couldn't
 work halo off clamps - Carbon little
 distorted - Considerably burned on
 one side of filament - Clamps clean

V	amp	Reo	Fth	Temp	Sp	e
103	69	149	3141	1052	168	" 16
135	1.02	152	6105	5.41	433	" 80

ret 50 100
 up 64 58 - Lasted 145 min Carbon not very black
 globe rather black.

Lamp No 15 ^{Anna Edison}
^{J. F. Allen} Aug 4/86

Washed with Bichromate + SO₄
then water afterwards in distilled
water - Dried over lime - Put on
regular pump - Put in few pieces
of Chloride Calcium - Got quick
vacuum - Quite blue in bulb.
Not very much air - Blue came off
clamps easily - Chloride Calcium
still loose in bulb did not stick,
although I heated it strongly with
kerosine lamp - It illuminated very little
distorted - one side slightly turned -
Clamps clean -

646/ No 15

V - amp.	Res - 7665	Lamps C.P.	150 - 11.2 @ C. 10
100 - 71	140 - 3141	10.52 - 16F	16
150 - 102	127 - 5865	5.63 - 43V	80
set 30 - 180	430 - 670		
af - min - min	min - min		
80 - 76	86 - 41	48	

Wm. L. East 11/10

(31)

Bulb black brown - clamps clean
 vibration filament good. shade of black
 less brown than No. 6.

Lamp No. 16 Minia Edison

Washed with ^{2.5.0.111} Bichromate & SO₄ -
 then common water afterwards
 distilled water - Dried in drier
 Chloride Calcium put in bulb -
 Put on water jacket pump - Pump
 bad, broke vacuum through gas-
 line sponge - put on regular pump
 broke 7 filament little distorted
 burned on one side - clamps clean
 Reversed current - Blue in globe;
 blue halo difficult to get off -

V	amp	Res	Filts	hamp	CP	at
106	71	149	3318	9.94	159	16
138	105	131	6115	5.14	411	80

Setup 80 arcd in 20 min

No 17 Lamp - ^{Mina Edison}
^{1.5.1886} Aug 6/86
 cleaned with Rechlorinate and SO₄,
 then common water afterwards distilled
 water - Dried in Drier - chloride
 Calcium put in bulb - Then poured
 in some gasoline, emptied it and
 put on regular pump. Also hung
 in clamps, couldn't work off - quite
 blue in globe - Clean tube, heated
 Chloride Calcium with kerosene but
 not after filament was lighted -
 Shiner OK on both - burned lamp
 10 min. 40 candles; Clamps very
 clean - Globe clear - chloride Calcium
 didn't stick to globe lies in the
 bottom -

V	amp	Res	Flbr-	Lamp	Eff	CP
104	72	144	3318	9.94	159	16
134	104	129	6149	5.36	429	80

⁵⁰ 72 ¹⁰⁰ 70 Lasted 163 min
 Globe moderately black filament rather black.

No 18 lamp - ^{Mina Edison}
^{2.5. 1886} Aug 6/86
 Washed in Bichromate + SO_4 then
 common water afterwards distilled
 water - Dried on fire - Then few
 drops of strong Sulphuric acid put
 in bulb - Put on regular pump -
 Oxidized quickly on lighting
 filament - & volatilization of SO_4 -

Lamp No 19 ^{Mina Edison -}
^{Jan 27 1886} Aug 6/86
 Washed with bichromate and SO₄
 then common water afterwards dis-
 tilled water - Dried in air - Lamps
 of caustic ~~potash~~ ^{potash} put in bulb -
 Put on regular pump and heated
 by kerosene lamp, so water is
 driven off H₂O & made anhydrous;
 On heating filament great deal of
 gas comes off - Not very blue in globe -
 Vacuum obtained quickly - Both
 lamps got clean on melting fili-
 ment to 30 C.P. - peculiar holes
 around old clamps & circular ring
 around small part of globe - Bringing
 it up higher threw out large quantities
 of gas - After heating filament
 somewhat, plenty of blue in the
 globe - Brought current up so clamps
 commenced to melt - Reversed current -
 Very much formed on one side -
 Filament not much distorted -
 clamps exceedingly clean - On high
 current clamps got ^{very} ~~exceedingly~~ hot
 and large quantities of air would

Lamp No 19 ^{Myia Edison}
 come off each time = ^{J. F. Allen} Aug. 6/86.

Discovery - The action of the carbon on the KO has reduced it to molten metallic state, about 50 milligrams of metal with good lustre shown on globe -

V	amp	Res	Flb.	Temp	CP	—
101	.75	135	3353	9.85	158	80
138	1.13	122	6900	4.78	380	

Setup 15 mi
 80 - 3 candles - lasted 30 minutes, went up in resistance immediately globe tinted filament dead black.

Lamp No 20 ^{2. F. D. H.} ^{Aug 6/86} ^{Minia Edison -}
 Washed with Bichromate + SO₄
 then common water afterwards
 distilled water - Dried on dry -
 clean glassy glacial-phosphoric
 acid! $\frac{1}{2}$ Humber put in globe
 Lamp put on regular pump and
 glacial melted which it does with
 difficulty by known lamp. While
 being exhausted lamps cleaned
 themselves while heating the glacial.
 The glacials further, then melts to
 glass + slightly solidifies, everything
 any time. Some filament high
 considerable air comes out but it
 tube quickly gets solid apparently
 slumping glacial gets hot absorbs the
 product - Blue goes off easily -
 Ordinary amount of blue in globe -
 One clamps pretty clean, other a
 grey - Filament pretty straight -
 Shine probably off a shade on one
 side - Negative - Dried lamp
 20 minutes at 40 c.p. -

8/7/86

No 20

v-amp- Re- Filts - ^{amps} C.D.
 99- 74 - 134 - 3274 - 10.08 - 161 " 16
 130 - 110 - 119 - 6326 - 522 - 418 " 80

act 30 - 60 100 310
 up - min - min - min - min
 90 - 40 - 32 - 29 - 30

Close, deep blue on + clamp.

Mimulus fasciatus 520

Bull not blackened - filament very
 black - pieces of filament on side of
 bulb - one clamp dead black - slight
 brown deposit in one or two spots

Lamp N° 31 - Aug. 9/86

J. S. M. Minia Edison -
Hinton, N. York

Regular unwashed lamp, put
in water jacket pump - This lamp
was not dried, immense quantities
of water given off so it gave CO every
time I heated filament. No mercury
shown in small spectroscopic but
exceedingly small strong carbon acid
CO in Ballo. No blue in globe or if
any very faint - Couldnt get a
vacuum - burned it for a while
and had to take it off - Put on a
cleaned and dried lamp - The
filament of lamp taken off -
Badly blackened -

Lamp No 22 Minia Edison
 J. V. Foree Aug. 9/86

Washed with Bichromate and
 SO₂, then common water afterwards
 distilled water - ^{and with dim.} poured gasoline
 in and then put on regular pump.
 Lighted filament and run it al-
 most instantly to 50 candles before
 tube was quite solid. Large quantities
 of air came out probably due to H₂
 from decomposition of the gasoline.
 Even after burning for an hour very
 fine pin heads of air came off.
 Sealed it off although microscopic
 air bubbles coming off. Globe tinted
 Carbon browned on one side. After
 24 hours filament vibrates $\frac{1}{4}$ of an
 inch and comes to rest in 45 seconds.

8/18/86/ No. 22.

V	amp	Rs	Fills	Lamps	C.D.
109	78	156	3362	1450	1450 @ 0.10
193	1.02	130	6457	882	157 " 16
				5.11	409 " 50

set	30	60	250
up	run	run	run
to	84	72	53

Minia last 450

Vibration good - globes very little blackened
It has a brown appearance, -

Lamp N° 23

Mina Edison

~~Sept 9/86~~ Aug. 9/86

Washed with Bichromate & SO_2 , then
common water afterwards distilled
water - Martin cleaned lamp -
Put it on jacket pump to take
the place of N° 21 - Filament ~~oxidized~~
oxidized and blackened badly showing
water - The chloride Calcium used
for a drier in this pump shows
no signs of water - It's probably no
good and phos. anhydride is re-
quired -

Lamp W^o 24 Minia Edison
 J. F. Allen Aug. 9/86
 H. H. Jones

Washed Bichromate and SO_4 , then
 common water afterwards distilled
 water - Dried with drier - Put
 thumbful of Carbonate Potassium
 in globe - Got vacuum heated KCO_3
 gave off lots of gas. heated filament
 globe very blue with mercury so strong
 could scarcely see CO_2 with little
 spectroscope - Stopped heating KCO_3
 when it ceases giving off gas. Got solid
 tube - turned lamp quite high - 80 CP.
 for 10 or 15 min. Removed elements.
 Clamps clean - Shine very strange to
 say don't seem to be taken off - No blue
 on clamps - Globe clear - After 24 hrs.
 filament vibrates $\frac{1}{2}$ comes to rest in
 about four second -

Lamp W^o 20 Minia Edison
 J. S. Ott
 M. H. Force Aug 9/86

Washed with Bichromate and SO₄
 then common water - afterwards
 distilled water - Dried on drier -
 Put on regular pump got vacuum
 broke it and took off lamp - Then
 took smaller tube and put phos-
 phoric anhydride down through
 it - to bottom of the globe lamp a very
 little got on side of the globe - Heated
 globe to make it stick to bottom -
 Put it on regular pump - Heated
 this with kerosene for several mins.
 gently got solid tube and broke it -
 found time to time instantly pulling
 plug ran it for 20 minutes with solid
 tube - no kerosene or current - then
 put on current and broke tube, very
 little air comes out each time - allowed
 it to run 20 minutes, no current, then
 couldn't break it - Reversed current -
 let it run 10 mins at 50 C.P. - Could not
 break tube let it run

8/18/56

No. 25

V - Amp. Res - Fills - Lamp @ C. 12
 108 - 72 - 130 - 3442 - 9.60 - 154 " 16
 141 - 101 - 140 - 6252 - 5.25 - 420 " 80

set

up

80.

Serialized in 2 minutes

Lamp No 26. Minia Edison
Sept. 9/86

Washed with Bichromate and
SO₄, then common water, afterwards
with distilled water. Dried on dried
Put tube down and forced a small
quantity, of the size of a pea, of
Phos. Anhydride to bottom - A
little stuck to the side of the globe
then heated globe to make Phos.
Anhydride stick to the bottom
of the lamp - Put it on water
jacket pump - this lamp pump
had some Phos. Anhydride put
on the chloride calcium -
Heating lamp gently with Kerosene
lamp - Keep it exhausting while
is heating. Brought Carbon to
dull red for $\frac{1}{2}$ min. Keep 1st
pig in on 2nd current for 10 min -
Heated for $\frac{1}{2}$ hour with Kerosene
with solid tube to give plenty
chance for Phos. Anhydride in
globe to absorb the water vapor -
The small piece of Phos. Anhydride
dropped down partly on side globe



(P)

Lamp No 26. Continued. - Maria Edison
 Sept. 9/16
 partly in full tube - When it become
 viscid = probably some volatilized =
 then brought lamp up quickly to 16 candle
 and disconnected - considerable air
 came off. Then heated it to 80 candle
 power - considerable air came off.
 The globe is very blue from mercury
vapor; where did it come from?
 Can't get rid of. Hg blue in the
 globe - It's very strong. Can't break
 tube, allowed it to burn 10 minutes
 at 80 candle power, sealed off -
 globe slightly tinted, filament
 browned both sides - Very slight
 volatilization - Phos. Anhydride
 in bottom of the globe - Clamp dirty
 after 24 hours filament vibrates
 and comes to rest in one second -
 Seal cracked. J. S. Ott

Lamp No. 27 *Maria Edison*
J. A. Edson Sept. 9/86

Washed acid & with Bichromate and
 SO_4 then with common water, after-
 wards distilled water. Dried
 on fire for $\frac{3}{4}$ of an hour.

Then with Centin tube put $\frac{1}{2}$ thickness
 full of Rhos. Anhydride at bottom.
 In the lamp - none touched sides -
 just little bit got ^{on} inside parts be-
 tween the clamps. Put in long
 tube and got most of it off. Heated
 lamp with Kerosene to soften and
 stick Rhos. Anhydride to glass so
 it wouldn't drop down. Put it on
 regular pump with Kerosene lamp
 under the bulb - It got a solid
 tube very quickly. On first current
 it I put, it plugs in which is
 4 @ 5 plugs less than wd and keep
 pump going with solid tube - this
 current and Kerosene for $\frac{1}{2}$ an hour.
 Put it on second peg at 3. 26 p.m.
 It did not break tube but small
 pin heads are coming down all the
 time but few in number after
 running gradually to fourth peg



No. 27 continued Minia Edison
J. O. P. H. Sept. 9/86

and dull red, ran it up quickly
to high candle power. Great deal
of gas came off - But inside of a
minute it all went and could not
break tube even by reversals - Guess
there was true air and not water -
Shine all right - Globe very blue, no
halo - Lamp clean - Filament much
bent - Clamps no clean - Phos.
Anhydride stuck to bottom not
none went on sides - After 24 hrs.
filament vibrates $\frac{1}{16}$ and comes to
rest inside of 2 seconds. Seal cracked.

Lamp No. 28 *Maria Edison*
J. F. M. Sept. 9/86.

General experiments -

Carbonate and Bichromate dry, ground
 up with pyrogallie acid, absorb
 oxygen from the air, use this in
 pump - Carbonate better than Bi. Carb.

Phos. Anhydride can be kept and
 moulded in any shape under
 gasoline and of course almost
 any Hydrocarbon -

Tested clean lamps after going
 through washing with Bichromate of
 Potash + SO_4 and distilled water -
 Faint trace SO_4 with Chlor. Barium
 but second boiling and washing
 with distilled H_2O got rid of it
 entirely -

Mercury is attacked by Sulphuric
& Potassium - Perhaps it won't
 be dry - Can use this substance in
 pump to absorb Hg vapors -

Lamp^{no} 28 of 50th Mina Edison Sept. 9/86.

Started 1150- 2 1/2 lb. Hg pump
 Slowest pump yet- Lamp washed
 by Martin on 12th of Aug. laid un-
 til today, the 21st of Aug. With cork
 in had previously been washed in
 Bichromate & SO_4 , then common
 water, afterwards distilled;

I put Phos. Anhydride in
 Exhaust tube and made regular
 contraction both sides of it- Heated
 lamp while exhausting by Kerosene
 Took it off at 3 o'clock worked it
 up very slowly- then burned it
 for ^{about} an hour at 80 C^p- Lint the
 in globe; Did not remove poles. One
 side somewhat browned other side
 very shining clamps- On side that
 is browned is dull and lead colored,
 other pretty clean- Globe considerably
 tinted in regular blotches-

(91)

Lamp No 28 -

Minia Edison

Sept. 9/86

Lamp tested - 8/21/86

J. S. Ott

9 -	amp	-	Res	-	4 lbs	-	Lamp	CP
112	-	.85	-	120	-	3849	-	8.57-137-16
134	-	1.22	-	109	-	7211	-	4.58-366-50

St	40	70	180	310
up	-	min	-	min
80	-	78	-	72
			-	62
				50

Munies lasted 600

Bell very black one clamp
black. Vacuum good.

Lamp 20° 2/86 Minia Edison
p. 500 Sept. 7/86

Tried running lamp off no vacuum
Regular, then breaking vacuum
and testing sides of globe for trans-
parent film - Did not get any. Put
on another lamp and run off
regular but burned it for about
40 minutes at 50 Cp., got blacking
in Hotches, this came off in film
quickly with HCL. Could not de-
color it with HCL and Nitric acid
together or on addition of SO_2 - On
heating either there was a very
transparent film in first lamp,
that could not be seen which was
Silica from the ash or the film
is a compound formed by H_2O &
the carbon, which compound is
not thus attacked -

Lamp No. 30

Minia Edison
J. S. 11th Sept. 9/86

Put solution of permanganate of potash in globe and evaporated water leaving a film. Run it regular and then allowed it to stay on pump an hour at 80 Cp. about. Globe blackened in very conspicuous blotches. Certain place showed absolutely no blackening. No cure -

8/23/86/ No. 30.

4 - Amp -	Res -	Filts -	Lamp, Cp.
98 - .80 -	122 -	3451 -	9.57 - 153 " 16
129 - 1.12 -	115 -	6371 -	5.18 - 414 " 80

Set - 20
up - min.
80 - 68

Acid in 25 min.

(97)

Lamp No 29 of 500 ^{thina Edison}

Sept. 9/86.

Slow pump - Phos. anhydride only
 in tubes and the bulb - Got vacuum
 then heated it quickly, got all air
 could out and then pump stopped -
 Got good vacuum and sealed off.
 Heated one side partially by
 Kerosene lamp -

8/23/86 Lamp 29.

9 - Lamp - Rec - H₂O - Lamp CP
 113 - 71 - 159 - 3451 - H₂O - H₂O @ 15
 145 - 133 - 140 - 6592 - 5.01 - 4.01 " 80

Set
 up
 80

Acid in 20 minutes -

Lamp No. 31 of Thomas Edison
 Sept. 9/86
 Solution of $\text{K}_2\text{S}_2\text{O}_8$ Pyrophosphate
 Soda - Washed with Bichromate^K and
 SO_2 , then common water, afterwards
 distilled water then the distilled
 water containing the pyrophosphate -
 a little solution touched cath and
 clamps. Dried on drier - $13\frac{1}{2}$
 pump - filament slightly browned
 both sides having reversed current.
 Globe slightly tinted, more near
 clamps. One clamp nearly melted
 Globe not so very black for the life -
 Ration less than average - clamps
 clean -

8/23/86/ No. 31.

7 - Amp - Res - Filts - Lamp CP
 104 - .77 - 135 - 3539 - 9.32 - 149 " 16
 127 - 1.10 - 125 - 6237 - 6.29 - 423 " 86

SL - 40 80 - 150 250 450
 up - min - min - min - min - min
 80 - 72 - 66 - 59 - 55 - 44

Minutes lasted - 6.20

Lamp No 32

Uina Edison

Sept. 9/86

Solution of Nitrate Ammonia - J.F.O.H.

washed with Bicarbonate, K and SO₃
common and distilled water then
the distilled water containing Nitrate
Ammonia - & Water. Dried in
drier - 13 1/2 pump - & shinnest
slightly browned on both sides,
having reversed currents. Clamps
melted. tried another -

Lamp No 33

Mina Edison
Sept. 9/86

Solution of Chloride Copper -
Washed with Bicarbonate, Hand SO₃
common and distilled water then
distilled water containing the
Chloride copper - Dried on dish.
13 1/2 pump - Filament very slightly
blackened - Globe at first white
afterwards got quite blue - Probably
chloride decomposed; bulb clear -
except slight coppering, faint deposit,
down by clamps - Clamps clean
but dull.

8/23/86/

No. 33

9 - Amp - Res - Filts - Lamp CP
104 - .73 - 142 - 3362 - 82-157-16
127 - 1.03 - 133 - 6238 - 5.29-423-80
Set 40 - 80 100 250 430 745
up min - min - min - min - min - min.
80 - 66 - 62 - 68 - 58 - 44 - 40

900. 1255 1425 1675 1815
min - min - min - min - min
39 - 32 - 30 - 30 - 29

Minutes tested 2005
Globe purplish black. Clamps clean.

Lamp No 34 Mina Edison
g 50th Sept. 9/86

Solution sesqui-chloride
chromium with little proto-chloride
chromium - Washed with Bi-
chromate, K and SO₃, common
water and distilled water after -
washed distilled water containing
chloride chromium with little proto-
chloride chromate - Dried on
drier - ^{13 1/2 percent} Sesqui dont seem to
dissolve but fine powder - Lamp
bult - good vacuum, filament
slightly browned on one side -
Revised current; clamps clean
but dull - Blackened globe - one
side filament not dead black -
Clamps clean -

8/23/86/ No. 34

9 - Amp - Res - Hts - Lamp - CP
102 - 72 - 141 - 3230 - #15 - 108 @ CP
182 - 105 - 125 - 6149 - 6.37 - 480 480

LT	40	80	160	250
mf -	min	min	min	min
80 -	76	62	52	44

Minutes lasted 325.

Lamp No 30 ^{Wm. Edison} J. S. M. Sept. 9/86

Solution per chloride of Antimony
in water and = Solution rather
opalescent - Washed with Bechnard's
K and SO₃, common water and
distilled, then distilled water con-
taining perchloride of Antimony
in water - Dried on drier - 1 3/2 p.m.
Clamps clean - Filament seems in-
tinned either side - Globe just a
shade tinted - ~~black~~

Globe ordinary black - clamps
clean - Filament dead black -

8/23/86/ No. 35

T - Amp - Res - Filts - Lamp CP
106 - 72 - 147 - 336.2 - 7.82-107" 12
108 - 108 - 127 - 6591 - 5.81-1401" 50

Set 40 80 150 250 430
up min - min - min - min - min
80 - 78 - 68 - 56 - 49 - 39

Minutes lasted 550

Lamp No 36 g 5.00^{Wm} Edison Sept. 9/86

Solution Glacial Phos. acid -
 washed with Bichromate, K and SO₃
 common and distilled water, then
 distilled water containing Glacial
 Phos. acid. Dried on air pump
 13 1/2 - Solution got on carbon and
 clamps - Globe clear, filament
 pretty shiny, clamps moderately
 clean - nothing else noticeable -

2/23/86/

No. 36

W. Amp - Res - Htts - Lamp C.P.C.P.
 105 - .73 - 144 - 3406 - 9.70 - 155 - 16
 136 - 1.05 - 129 - 6326 - 5.22 - 418 - 80

Set No 50 150 250
 up - min - min - min
 50 - 74 - 68 - 57 - 40

Lasted 250 minutes

lamp No 37 . . . ^{Wm. Edison}
J. S. Oth Sept. 9/86

Solution Potassium Nitrite -
Washed with Bichromate, K and SO_3
common water and distilled water
then distilled water containing
Potassium nitrite. - Solution allowed
to get on carbon and clamps -
Dried on fire - $13\frac{1}{2}$ pump.
Acid hard to get off pump -
Deposit quite large on glass. Will
try a weaker solution -
Burstid -

Lamp 38

Mina Edison
J. F. M. Spt. 9/86

Solution Pyrogallie acid and
Bicarbonate Potash - Washed with
Bichromate, K and SO_2 , common
and distilled water then distilled
water containing Pyrogallie acid
and Bicarbonate Potash - Solution
did not get on clamps or carbons -
Dried on fire - $13\frac{1}{2}$ pump -
Lamp blackened as much as
though it had been running 500
minutes - due to action of O on
Pyrogallie - Filament only slightly
of any browned, about same color -
Filament - dead black -

8/24/86 -

Lamp No 38

9- Amp. - Res. - Watts - Lamp C.P.
107- .76 - 148 - 3598 - 9.17 - 147 " 16
140 - 1.12 - 125 - 6946 - 4.75 - 380 " 80

Set	30	60	120	235
up	- min	- min	- min	- min
80	- 75	- 70	- 56	- 40

Minutes lasted 200

Lamp 39 Mina Edison
J. F. Pitt Sept. 9/86
 dust in chloride Magnesium strong-
 washed with Bichromate - K and SO₃,
 common and distilled water then
 distilled water containing chloride
 Magnesium - Got on clamps and
 carbon - dried on drier - Pump 13 1/2
 the mercury pump stopped and
 Phos. Anhydride flew up into
 lamp - Stopped for the night - Let
 lamp stay on pump, at 9 A.M. the
 24th of Aug. started it up again -
 Almost impossible to get vacuum
 again after two hours had, Phos.
 Anhydride all viscous from absorption
 of water, probably from chloride
 Magnesium filament - Burned
 clamps, moderately clean - Plate
 clean except white deposit -
 8/24/86 Lamp 39 -
 Lamp CP
 4 - Lamp - Res - 4 lbs - 2.1 - H.P. @ C.P.
 108 - .75 - 143 - 3583 - 9.21 - 147 " 16
 139 - 1.08 - 129 - 6636 - 4.97 - 398 " 20

Let
up
86

Acc'd in 20 minutes

Lamp 40 - ^{Wm. Edison} J.F.M. - Sept. 9/86 -

Solution Bisulphide Carbon -

Unwashed lamp - put it on pump
Pump stopped, Phos. Anhydride
pumped into lamp - Let it re-
main on pump but with air space
all night - Started it 9.30 A.M. on
24th of Aug. Almost impossible to get
vacuum - Finally got fair one -

One side of filament burned - Glbe
little burned in spots - Phos. Anhy-
dride in little spots - Clamps
clean, not absolutely sure that this is
bisulphide - Glbe clean - One
lamp black other clean - Filament
black -

Try again -

8/24/86 No. 40.

Lamp CP
4- Amp - Res - 4 lbs - H.P. - H.P. - @ C.P.
113 - .77 - 134 - 3494 - 9.44 - 157 " 16
133 - 1.10 - 121 - 6459 - 6.11 - 409 " 80

Set - 70 - 180
up - min - min
80 - .88 - 30

Minutes lasted 130.

Lamp #1 Mica Edison
J. F. Otto Sept. 9/86

Unvarnished lamp, solution
oxide magnesium, $\frac{1}{2}$ gram dry -
filament slightly varnished - very diffi-
cult to get off pump - Hard to keep
clamps from melting - very blue Hg.
clamps very clean - globe clean.

8/25/86 No #1 -

9 - Amp - Res - Hg - Lamp CP
103 - .73 - 141 - 3318 - 9.94 - 184 - " 16
135 - 1.46 - 129 - 6282 - 5.25 - 420 - " 80

St - 50 - 150 - 260
up min - min - min
80 - 71 - 52 - 38

Minutes lasted 315

Lamp 42

J. F. H. H. Mina Edison

Sept. 9/86

Unwashed lamp -

Hyper oxide Barium - $\frac{1}{4}$ gramme
 Burke first one made second filament
 slightly burned on one side - very
 difficult to keep from melting
 lamps - globe clear -

8/24/86/

No. 42

7 - Lamp - Res. 41112 - Lamp CP
 98 - 72 - 136 - 3141 - 10.52 - 168 - 16
 128 - 1.01 - 126 - 5707 - 5.78 - 462 - 80

lit 50 150 260 460 770 940
 up - min - min - min - min - min - min
 80 - 76 - 60 - 50 - 42 - 33 - 30

Minutes lasted 1075-

Globe very little blackened

Lamps clear not so much
 blackened as 51 -

Lamp 43

Wm. Edison

Sept. 9/86 -

Washed lamp - J. F. Ott

Solution: Borate of Berylate

1/4 gramme -

Globe clear - Filament bright - very difficult to prevent clamps melting

8/24/86/

No 43

5- Amp - Res - Watts - Lamp CP
 99- .73 - 136 - 2185 - 10.36 - 166 "16
 180 - 1.03 - 126 - 5928 - 6.57 - 446 "80

Set - 50 150 260 460
 up - min - min - min - min
 80 - 68 - 50 - 38 - 36

Minutes lasted 545

Less than ordinary blackening of globe - clamps clear - One side of filament not dead black -

Lamp No 44 J. S. Hts Minia Edison
Sept. 9/86
Unwashed lamp - Solution

Oxide of copper -
Hard to get off of pump - Very
blue from Hg. One side of filament
slightly blackened

8/24/861 No. 44.

4- Lamp - Res - Hts - Lamp CP
H.P. - H.P. @ CP.
100 - 70 - 143 - 3097 - 10.67 - 171 " 16
131 - 150 - 131 - 5795 - 5.69 - 433 " 80

Set 50 150 260
up - min - min - min
50 70 52 41

Minia coated 365
Glow black perhaps above
ordinary -

Lamp 40- J. S. M. ^{Wm. Edison} Sept. 9/86-

Unrashed lamp - Solution
 Aside of Antineary - 1/2 Gammedy
 Almost impossible to get air out
 of this lamp - Probably it decom-
 poses - Clamps clean - Very difficult
 preventing them meeting. One side
 filament burned - Blue hangs -
^{cur} Built - Very little blackened -
 filament dead black - clamps clean -
 Dead black

8/24/86 No 40-

7- Amp - Res - 4 lbs - Lamp C.P.
 102- .6 - 134 - 3457 - H.P. - H.P. @ C.P.
 133 - 1.10 - 121 - 6459 - 5.11 - 469 " 80

Set 50 150 260
 up - min - min - min
 88 - 72 - 51 - 39.

Minutes lasted 280

Lamp No. 46 J. F. Otho Wm. Edison
Sept. 9/86 -
Unwashed lamp - Solution

Amorphous Phosphorus - $\frac{1}{4}$ gramme
wires wet - Amorphous Phosphorus
stands high heat without change -
Lamp works well - Phos. sticks
in one place - Clamps very dark -
filament bright - Bolt clean -

8/24/86/ No 46

4 - Lamp - Res - Fitts - Lamp CP
P.P. - H.P. @ 100
97 - .72 - 135 - 3097 - 10.67 - 171 " 16
127 - 1.00 - 127 - 5618 - 5.87 - 478 " 80

Set
up - min
80 - 78

try again

Minutes lasted 140

Filament only burned. Globe
not black but brown - light brown -

Lamp No. 47 J. S. ^{Wm. Edison}
Sept. 9/86

Unrashed lamp. Solution arsenate
Antimony - $\frac{1}{4}$ gramme dry.
No blue in globe -
Dirt in fall tube -
Clamps dark drat -
Bulb slightly tinted near clamps
Filament bright -

8/24/86/ No. 47

5 Amp - Res - 4.44 - Lamp CP
4.12 - 4.12 @ CP
119 - 1.76 - 152 - 36.28 - 9.09 - 145 - 16
142 - 1.09 - 130 - 68.57 - 4.81 - 385 - 80

Set - 50 150
up - min - min
88 - 78 - 57

Minutes lasted 100 -
Globe only moderately black
clamps clean -

Lamp No. 48 J. F. O'H. Minia Edison Sept 9/86.

Unwashed lamp - Solution
Sisqui oxide of Iron.

Enormous amount of gas comes off
when heated by Kerosene lamp -
Clear globe - Clamps clean - and
although burned high for 1/2 hour
both sides of filament shining -

8/24/86/ No. 48

9 - Amp. Res - #1112 - Lamp CP
101 - .74 - 136 - 3318 - 9.94 - 189" 16
130 - 1.05 - 114 - 6661 - 5.45 - 436" 80

Set	20	100	230	350	660	830	980
up	min	min	min	min	min	min	min
80	73	60	52	44	34	34	30

Minia last 1160

Globe very black -
Filament black - clamps clear -

Lamp 49 Minia Edison
J. F. H. Sept. 9/86

Microscopic Lamp - Solution
Chloride Ammonium - Dances
and volatilizes in lamp with
Kerosene lamp - but doesn't heat
vacuum in the least - filament
dead black - too much frosted -
no good -

8/24/86/

No. 49

4 - Lamp - Res - Filts - Lamp CP
117 - .74 - 158 - 3849 - 8.57 - 137 " 16
149 - 112 - 133 - 6388 - 6.16 - 361 " 70

Sit - 20
up - min
90 - 7

Minia lasted 60

Lamp 50 J. F. H. Minia Edison
Sept. 9/82
Unwashed lamp -

1/2 Gramme Lamp dry - Solution
Iodide Lead - Kerosene lamp used
Iodide Lead volatilized without
decomposition - Globe very yellow
Almost opaque - Can't see state of
filament - Came off vac. very
easily -

8/24/86/

1/2. 00 -

9- Lamp - Res - Hltz - Lamp CP
124- .87 - 143- 4777 - 4.91- 111 " 16
149- 1.14 - 131- 7521 - 4.39- 193 " 44

Set - 40
up - min

44 - 40

Minutes lasted 70.

Lamp 51. J.F.H. Minia Edison
Sept. 9/86
Unrashed lamp -

Solution Fluoride Calcium -
1/4 gramme - 4 filament - 1000
one side - Clamps clean - Globe
clean - Don't work well on pump -
8/24/86/ • No. 51 -

T- Amp - Res - Filts - Lamp CP
HP - HP @ CP
111 - .76 - 133 - 8406 - 9.70 - 105 - 116
130 - 1.54 - 118 - 6326 - 0.22 - 418 - 80

Set	50	150	260	460	770	
up - min	-	min	min	min	min	
80	-	76	-	56	-	48
						45
						34

Minutes lasted 820

Globe only little blackened
Best yet except the 3100 minute lamp.
There are spots where there is no
blackening -

(1540)

Lamp No. 52 J. E. H. Edison
Sept. 9/86 -
Unwashed Lamp -

Solution Dry peroxide Barium.
1/2 gramme - Heated with Kerosene
Filament OK. works well on pump

8/24/86/ No. 52

9 - Amp - Res. 4000 - Lamp CP
110 - .77 - 143 - 3700 - H. R. H. P. CP.
144 - 1.15 - 125 - 7344 - 4.49 - 313 "50

Set 70 180 390
up - min - min - min
80 - 56 - 48 - 37

Minutes lasted 575

Scarcely any blackening globe -
Clamps clean - Filament dead
black -

27 1/2 Washed with Bichromate. K
and SO_3 , common water and
distilled then distilled water con-
taining H_2 itate Potassium solution
(not sure) may be Bisulphate carbon-
but think not. Forgot to number it
filament bright - Lamp inescapable
finishes near clamps -
clamps dirty.

24/86/ No 27 1/2
Oxidized before reading could be
obtained - Cracked in seal.

J. F. Holt

145

Lanip 53

Minia Ediam
Sept. 7/86 -

Lamp 54

Union Edison -
Sept. 9/86 -

Unwashed lamp - Metallic tin
in powder. white Volatile matter
comes off - very little air comes off -
Most white except at high in -
candescence. then little blue only.
Drops splendidly on pump - filament
right both sides - Carbons perfectly
straight -

8/20/86/ No 54 -

9 - Lamp - Res - Filts - CP
104 - .79 - 132 - 3650 - 9.04 - 145 " 16
135 - 1.13 - 120 - 6750 - 4.89 - 381 - 80

Set	40	130	300	450
up - min	-	-	-	-
80	-72 -	60 -	42 -	37

Minutes lasted 600
pretty black J.F.D.H.

149

Lamp 55

Minia Edison

Sept. 9/86

Unwashed lamp - Solution
 Acetate Aluminum. Yellow residue
 Globe clean - clamps clean -
 Filament trimmed both sides -
 distorted -

8/24/86

To 53

4 - Amp - Res - Htz - Lamp CP
 III - .70 - 159 - 3451 - 9.57 - 103.16
 147 - 1.04 - 141 - 6769 - 4.58 - 390.80

Sol

ref

80 -

Arc'd in 10 minutes

arc'd

J. F. Vt.

Lamp 56

Wm. Edison
Sept. 9/86

Unwashed Lamp.

Solution Litmus - blue clear,
filament OK - Had to take it
off pump & rather quickly pump
stopped - clamps clean -

8/25/86/ N. 56

9 - Lamp - Res - Filter - ^{Lamp CP} 41.15 - 41.15 @ CP
115 - .75 - 140 - 3495 - 9.44 - 151 - 16
136 - 1.05 - 129 - 6326 - 5.22 - 418 - 80

Set	20	40	60	120
up	min	min	min	min
80	- 74 -	66 -	62 -	48

Moderately black globe
Minutes lasted 140
J. F. Ott

Lamp 57

Mina Edison
Sept. 7/16

Unwashed lamp solution
Tritate Autiumy - impossible
to get vacuum after 2 hours -

Acid

OK

Burst - J. F. Vth

Lamp 58

Mine Edison

Spt. 9/86.

Unwashed Lamp. Solution
 Chlorate of Potash - Globe
 diam - one lamp black -
 Other not clean - Chlorate melted
 some of hard - slight
 brown on globe near clamps
 One side filament browned
 near clamps -

8/24/86/ 40 58

T. Amp. Res. Hlts. Lamp CR.
 101 - .70 - 144 - 3144 - 415 - 415 @ 10
 131 - 1.00 - 130 - 5751 - 5.74 - 457.80

Set 30 00 140
 up - 40 - 28 - 30
 50 min - min - min
 40 - 38 - 30

at 50 min. deep blue
 on clamp - Arc'd in 180 min.

J. F. W.

Lamp 59 Maria Edison
Sept. 9/86

Unrashed Lamp - Solution
Oxalate Copper - filament browned
slightly on one side - burnt high for
3/4 hour - globe clear - One clamp
yellow like gold - other not very
clear.

8/24/86 22% 09

9 - Lamp - Res - Hts - Lamps CP
100 - .79 - 127 - 3495 - 9.44 - 151 " 16
130 - 1.12 - 116 - 6459 - 5.11 - 409 " 80

Set 20 00 80
up - min - min - min -
80 - 72 - 66 - 58

Acc'd in 125 minutes.

J F H

Lamp 60 Minia Edison
 Sept. 9/86
 Unwashed Lamp. solution
 Cyoxide Copper. Glaze burned
 considerably hard to get off -
 Spot in it. Filament burned -
 One side clamps clean.

8/24/86/ No. 60

F - Amp - Res - Htts - Lamp C.P.
 185 - .73 - 144 - 3400 - 9.70 - 185 " 14
 137 - 1.65 - 130 - 6371 - 5.18 - 4140 80

Set 20 50
 up - min - min
 80 - 72 - 58

No black or yellow - one
 side filament moderately
 shining -
 Minutes lasted 50 -
 J. F. Ott

Lamp No. 61

Mina Edison

Sept. 9/81.

Washed lamp - Solution
 Sulphuret Calcium - Globe
 clean - works well no pump -
 filament slightly burned -
 clamps black -

8/24/81 No. 61

F - Amp. Res. Htz. - Lamp CP
 103 - 73 - 141 - 8318 - 9.94 - 159 " 16
 134 - 106 - 126 - 6282 - 6.26 - 426 " 80

Set - 20 80
 up - min. min
 80 - 84 - 72

Minutes lasted 120.

Globe slightly blackened -
 clamps black - filament black -

J. F. Ott

Lamp No 12

Wm. Edison
Sept. 9/12

Unwashed Lamp - solution
Permanganate Potassium -
acid - several acc. formed
in lamp before one jumped -
Burned -

J. F. Ott

Lamp No 63 g. 5.00th Maria Edison
Unwashed Lamp - Solution

Ferricyanide Potassium -
1/4 gramme.

Filament - badly distorted
Little hard to get off - Pump
Globe slightly tinted - One side
filament burned -

8/24/86/ No. 63

4 - Lamp - Res. Hts. - Lamp CP
96 - 70 - 137 - 2964 - 11.13 - 178 " 16
125 - 1.06 - 118 - 5884 - 5.61 - 449 - 80

Sit	20	100	250	350	460	830
up	min	min	min	min	min	min
50	72	40	36	32	22	24

980 1220
min - min
19 - 16

Minuter lasted 14 75

Black globe, clamps usual amount
Lamp - Filament dead Black -

Lamp No. 64 J. S. O'H. Minia Edison
Sept. 1/86

solution Murashed Lamp -

" Iodide Potassium - Clamps
clean - If salt heated will be
Krusine lamp work off easy -
Built clear filament - shining -

This lamp returned as 54 -
There being two 54 - But think
it is 64 - Not a bit of blackening

There is a light brownish coloration
like the 52 hour 80 CP lamp -
Filament black - Clamps moderately
clean - This is on right back and
probably due to free Iodine gone off
when K₂I heated -

8/24/86/ No 54 - Lamp CP
9- Amp - Res - Htts - H₂O - H₂O @ CP
97 - .78 - 124 - 336.2 - 9.82 - 157 " 16
127 - 171 - 115 - 62.38 - 6.29 - 423 " 80

Sl. 20 - 50 - 140 - 260 - 570 - 740 - 890
up min - - - - -
80 - 80 - 72 - 64 - 56 - 48 - 45 - 44

Ministio lasted 1060

Lamp No. 15 J. S. Edson
Sept. 9/86

nothing in globe put on pump
when there are 2 milligram
of Iodine in Phos. bulb.
Hq blue in globe - Iodine
partially got covered up - Globe
clear, clamps as rather clean -
filament little darkened -

8/25/86/ No. 65

T - Amp - Res - Hlts - Lamp. C.P.
108 - .72 - 150 - 3445 - 9.59 - 133.112
109 - 1.04 - 134 - 6400 - 5.15 - 412.150

Let 40 110
up min - min -
to 92 - 70

Minutes lasted 130

Globe more than ordinary
black - Did not get water out
Igniss -

(174)

Lamp No 66

Wm Edison
Sept. 9/86.

Acetate Lead no good
too much water bursted in
pump -

J. F. Wts

Lamp No 17

Union Edison

Sept 9/86

Unwashed lamp -

Solution Arsenias Potash -

Butt tinted - Filament black-
 roset blackened yet white
 in pump - hard to get off -

8/25/86 H² 67

9- Amp - Res - 4100 - Lamp CP
 107 - 78 - 138 - 3700 - 8.92-143 "16
 108 - 1.14 - 12.1 - 6970 - 4.78-378.80

Set 40 130
 up - min - min
 80 - 82 - 56

Unwashed lasted 130

Blackened about equal
 filament dead black -

J. F. Ott

Lamp No 68

Wm Edison

Sept. 9/86

Unwashed Lamp - Solution

Wingate Soda - Bulb clear.

Carbon shining - Comes off easy
clamps clean -

8/25/86/ No 68

T- Amp - Res - Htts. Lamp - C19
H10 - H10 - H10 @ C19

140 - .72 - 139 - 3190 - 10.35 - 162 - 16
130 - 1.02 - 128 - 5870 - 5.02 - 430 - 80

lit	40	120	300	2400	690	900	1130
up	min	min	min	min	min	min	min
	80	72	56	48	42	36	32

Minutes lasted - 1190

Lamps about regular black

clamps clean

Filament dead black -

J.F.H.

Lamp No 69

Wm. Edison

Sept. 9/86.

Unwashed lamp -

Solution Nitroquarsside Sodium
 looks little tinted - filament
 not perfectly shining -

8/25/86/ No 69

9- Amp - Res - Hts - ^{Lamp C.P.}
 #10 - 4.15 @ C.P.
 106 - .76 - 140 - 3575 - 9.25 - 148 - 16
 127 - 1.10 - 125 - 6675 - 4.94 - 395 - 80

Set 40 130

up - min - min -

80 - 80 - 58

Wires lasted 1.50

More than regular

Flackening - clamps clean -

J. F. Ott

(172)

Lamp N^o. 70

Alma Edison

Sept. 9/86

J. S. Ditt

Unwashed Lamp

Solution - Mercuric oxide

Acc'd on pump -

Lamp N^o 71.Wm. Edison
Sept 30/86

Dried on diem with heat then
taken off and a solution say 20
drops of Gasoline with Iodine
dissolved in it. Poured in lamp
white hot and put out lamp -
It worked very easy, scarcely any
air came off. Got a vacuum in
a few minutes, but upon allowing
it to burn vacuum air came
out. Also noticed a faint blue
halo on clamps although the
globe was white and the front
blue - Strange to say while the
globe is white at high CP. the blue
halo shows markedly strong. Maybe
decomposition of chloride of Mercury
decomposed & then recombined.
Clamps gradually become clean
showing either H. or Co. Blue
in globe. Clamps clean, filament
shining, Burn burning $2\frac{1}{2}$ hours
at 30 candles. Slight burning of
globe - The glass is not perfect
on filament but small

Lamp No 71

Mica Edison

J. S. 1888

8/26, '86

W.	Temp.	Res.	Htz.	Lamp	CP
				H.P.	H.P. @ C.P.
96	78	-	124-3325-	9.93	-159 " 16
125	109	-	115-6050-	5.45	-436 " 80

Set 30 60
 up - min min
 80 - 78 - 72

Munitions tested 200.

Globe black more than usual for
 this life - One side of filament brown
 other dead black - Clamps clean -

Lamp 72

Minia M. Edin
Sept. 20/86.

Bichromate Ammonia - Bulb clear
impossible to get rid of air - Salt
smells up enormously & continuously
gives off air - Filament dead black
burned $\frac{3}{4}$ hours on pump -

8/25/86/ No 72

F. Lamp -	Res -	ftlbs -	Lamp CP
111 - .81	- 137	- 3290	- 8.27 - 132 " 16
142 - 1.12	- 127	- 7050	- 4.68 - 374 " 80

Sit - 60
up - min
81 - 80

Minutes lasted 110

Lamp ordinary blackened bulb.

Lamp N^o 73

Mina M. Edison

Sept. 20/86

Unwashed Lamp -

J. F. G. H.

Lamp black - Comes off very easy
 Clamps moderately clean -
 Filament shining - Globe tinted
 a little, probably from lamp black.
 Little yellow in the narrow part of
 the globe probably a Hydro carbon
 from Lamp black.

8/20/86

9- Amp - Res. - $\frac{V}{R}$ - Lamp CP
 100 - .78 - 129 - 3460 - 9.63 - 153 " 16
 130 - 1.10 - 118 - 6350 - 5.20 - 412 " 80

Set	40	130	300	450	690	950	1130
up - min	min	min	min	min	min	min	min
80 -	74 -	56 -	52 -	46 -	38 -	37 -	38

1600	1960	2190	2490	2685	3380	3610
min -	min -	min -	min -	min -	min -	min -
31 -	30 -	28 -	26 -	25 -	23 -	21

Minutes lasted 3785

Pretty black. Clamps not very clean.
 The black has a yellowish caste.
 Think a great deal of it due to
 dirty effect of movement of the loose
 Lamp black. Vacuum good.

Lamp 74

Wm. H. Edison
J. F. 20/86

Unwashed lamp - Carbonate
of lead put in globe - Almost im-
possible to get vacuum - Lamp
dear clear - clamps clean - # Summit
black

8/20/86/

F. Amp - Res. Hlbs - Lamp CP.
128 - 63 - 203 - 3675 - 9.23 - 148 " 16
149 - 78 - 192 - 3750 - 6.41 - 256 " 40

Set 40 130 300 450
up - min - min - min - min
40 - 44 - 46 - 40 - 36

Minutes tested 540

Less black than ordinary -
white in spots, clamps clean.

Lamp no 75

Wm. M. Edison
J. 5th Sept. 20/86

Unwashed Lamp - lead chloride.
Iridescent, works well on pumps
very little of any Hg Hue - Globe
whitened some what - Clamps clean
shinest apparently shining both
sides

8/20/86/

F. - Lamp - Res - 4 lbs - Lamp CP
113 - .71 - 159 - 3550 - 9.29 - 149 - " 16
149 - 1.04 - 144 - 6865 - 4.81 - 385 - " 80

Set - 40 - 10
up - min - min -
80 - 74 - 66
Iridescent
not much blackening
Wm. M. Edison lasted 85.

Lamp No 76

Wm. H. Edwards
J. F. D. H. Sept. 20/86

Unwashed and undried lamp
about 10 C 15 - Whilligraue Bromide
Potassium - Scarcely any blue -
Slight blue halo - Scarcely any air
works off easily. Globe faintly
opalescent - Clamps clear -
filament shining -

2/27/86

T. Lamp - Res - Htts - Lamp CP
Htts - HR @ CP
108 - .76 - 144 - 3600 - 9.17 - 144 " 16
140 - 1.08 - 136 - 6700 - 4.92 - 394 " 80

Set 40 90
up - min - min
80 - 76 - .66

Minutes lasted 190

Black globe, clamps clear,
filament dead black -

Lamp No 77

Minia M. Edison
J. F. M. Sept. 20/86

Working in lamp - two pumps with
2 grammes - Sodium right on top
Phosphoric anhydride - Cup no
blue in globe. Little whitened near
clamps - Clamps showed tendency
to melt - Pump filament very up above
regular - Clamps not clean - filament
perfectly shining. Works off easy. No
air or at least hardly any, after a
red heat and then very little:

8/20/86/

9 - Lamp - Res. - Filts - Lamp CP
102 - 74 - 138 - 3350 - 410 - 410 @ CP.
132 - 113 - 127 - 6025 - 9.85 - 158 " 16
5.48 - 438 " 80

Set	40	110	260	500	760
up - min - min - min - min - min					
80 - 80 - 74 - 64 - 44 - 38					

Minutes lasted 820.

Bronnish black about regular amount.
clamps slightly dirty - filament bright
from clamp to $\frac{1}{8}$ inch up on the
side that broke

Lamp 78 J. S. 200 Minna M. Edison
Sept. 20/86

Nothing in globe but there are about
5 milligram of iodine in among the
Phos. Anhydride in cup. Want to
see if lamp get blue - Lamp free
of blue - Wipes off beautifully, hardly
any air - Clamps dull brown -
filament shining -

8/20/86

V-Amp - Rir - Filts - Lamp CP
100 - .50 - 125 - 3500 - 440 - 440 @ 10
130 - 1.14 - 114 - 6450 - 5.12 - 410 - 80

Set	40	110	260	500	760	940
up - min - min - min - min - min - min						
80 - 76 - 64 - 56 - 48 - 40 - 28						

Minutes lasted 1325

Globe rather black - Air clamps
clean other Carbon black - Filament
dead black -

Lamp 79.

J. S. ~~Atts~~ ^{Wm. M. Edison} Sept. 20/86

Unrashed lamp. Filicymide
Potash - Blt clear - clamps clean -
Filament very slightly browned some
part one side only. Burned high for
over 1/2 hour.

Not nearly as black as it ^{usually} ought
to be for this light - Filament dead
black - Clamps clean -

8/25/86/

7- Lamp - Res - ~~Atts~~ - Lamp - CP
+ R - + P. @ CP.
98 - .80 - 123 - 3475 - 9.55 - 15.2 - 16.
126 - 1.14 - 111 - 6375 - 5.18 - 414 - 80

Set - Co 230 380 620 880 1060 1630
up - min - min - min - min - min - min - min
80 - 80 - 64 - 52 - 42 - 41 - 34 - 32

Wintie lasted 1930
Quite black - Filament dead black -
Clamps clean -

(201)

Lamp 80 -

Wm. W. Edison

Sulphate Ammonia
Too much water in it.

Lamp Factory Notebook, N-86-08-24

This notebook covers the period August-December 1886. The entries are by Edison and John F. Ott. The book contains notes and drawings relating to the design of the municipal lamp, apparatus for carbonizing and bulb blowing, and the phonoplex. The spine is labeled "32." The book contains 20 numbered pages followed by 17 unnumbered pages. There is also one unnumbered page at the beginning of the book.

Aug. 24 86
T.C.

Made clamp of Copper
to hold filaments, open on
one side, then soldered
them by means of the etc,
using Copper, Iron, Nickel
Zinc, Tin, Lead, Magnesium,
and solder, as one told
Also used various salts,
Boric acid, Naptline,
Kerosene, Carbon Bisulphide,
Oxide Copper, mixed with
lamp black,
Oxide Nickel mixed with
lamp black,

Aug 27 86¹

Soldered Carbon filaments
in clamps with Iron
Pyrites J.A.

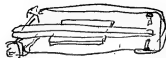
Phonoplex

2

Sep 8 86

J. F. O'K

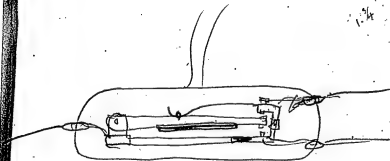
Ta



5/10/1

3/6

1 3/4



1

2

Circuit

Sep 10 86

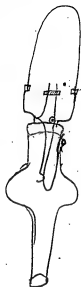
J. S. Ott
TAEAnhydrous
Carbonic acid
spring clampThe wires to
be plated on
same time the
carbon is plated
on and cover
them with rubber
tubing

2

3
Sep 10 86

J. F. Otto

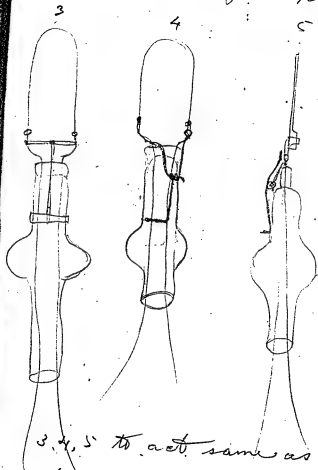
Tae



To be bound
with high resist-
ance compound
that will fuse
under 1000 volts
and allow spring
to close circuit

Sep 12 86

J. F. Otto⁴
Tal.



3, 4, 5 to act same as
No. 1.

J. S. O. H.

702

Sep 12 86

5

These were measured in a platform
with $\frac{1}{16}$ diam $\frac{1}{16}$ in depth

Tested different metallic
oxides and salts

Black oxide Copper over 100,000

Bismuth Trioxide ——— 100.000

Antimony Oxide — over 200,000

Cadmium Oxide — over 200,000

Zinc Oxide — over 200,000

Manganese Peroxide over 400,000

Measured contents Coal before

Carbonizing. ——— 2,000,000

After heating ——— 2,04

Charcoal before heating 100,000

After heating with blow
pipe ——— 35

J. F. O'H.

Tag

Sep 14 : 86

Tested different substance
for conductivity, to be
used in Mississippi Lamp,
Carbonized Charcoal treated
with hydrocarbon deposit

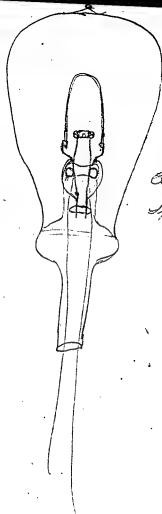
Piece $\frac{1}{8}$ thick $\frac{1}{4}$ square Ohms
1 $\frac{1}{4}$

Carbonized two moulds
Anthracite coal,

Heated one mould to red
heat then taken it out,
this coal measured 21,000 Ohms

The other the same heat
and left in twenty minutes
then taken out

This measured 500 Ohms



4
Sep 16, 86

J. F. O'Neil
TAE

Cool
Carbon
Spring clamp

1 Sep 16, 86

8

~~J. F. C. H. 2~~
Tar



Spring
clasp

Sept 16 80

J. F. O'K
Tae

9

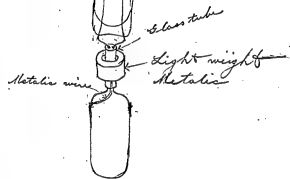


Sep 17.86

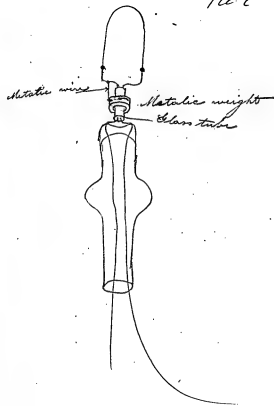
TaE

J. F. Ott

10



11
Sep 17.86 J. F. Ott
Ta E



J. F. O. H. ¹² Sep. 18. 86

TaE

Made small cups on
end of double barl tube
ran two wires through them
filled them with the
following compounds and
measured resistance

Copper Oxide	1 Gram	
Lamp black recarb	$\frac{1}{2}$ - "	Ohms 30

Copper Oxide	1 Gram	
Lamp black recarb	$\frac{1}{4}$ "	Ohms 46

Copper Oxide	2 Grams	
Lamp black recarb	$\frac{1}{4}$ "	Ohms 3,900

Copper Oxide	3 Grams	
Lamp black	$\frac{1}{4}$ "	Ohms 300,000

J. F. O'H
TAE
Sep 18 86

Copper Oxide 2 Gram Resist
Petroleum Coke Carbon $1\frac{1}{4}$ G. Ohms 6,900

Copper Oxide 2 Gram Ohms
Petroleum Coke Carb 1 G. 21,000
Packed it is lower according to
Resistance

Sep 20 86

Mixed Copper Oxide with water
packed in small cup on end
of double barrel tube, and
measured resistance

Ohms
dry 300,000
Worked with Wet 10,000

9 J.F.O. T&E Sep 20 86 14

Copper Oxide 1 Gram

P. C. Carbon $\frac{1}{4}$ " Ohms

Worked well Wet 4,400

Dry 211,000

10 Copper Oxide 1 Gram

P. C. Carbon $\frac{1}{2}$ " Ohms

No Good " Wet 200

Dry 1,400

Copper Oxide 1 part

P. C. Carbon $\frac{5}{8}$ " "

No Good

Wet Ohms 5,400

Dry 7,600

14 Copper Oxide 1 Gram

Bismuth Subcarbonate $\frac{1}{4}$

This worked fair

13. J. S. P. TAE Feb 20. 86 15-
Copper Oxide 1 Gram
Nickel Carbonate $\frac{1}{4}$
This worked fair

14. Copper Oxide 1 Gram
Lead Carbonate $\frac{1}{4}$ Ohms
~~250,000~~

13. Chromate Lead 1 Gram
P. C. Carbon $\frac{1}{4}$ " Ohms
Left circuit open 8 seconds
then fused 250,000

14. Red Lead 1 Gram
P. C. Carbon $\frac{1}{4}$ " Ohms
Left circuit open 8 seconds 250,000
then fused

15. Red Lead 1 Gram
P. C. Carbon $\frac{1}{2}$ Ohms
Made lamps dip, and 900
spattered a great deal then fused.

12 Chromate of Lead 1 Gram ¹⁶
P. B. Carb ^{J. S. O.}
No good $\frac{1}{2}$ " Chrom
15.

10 Copper oxide 1 Gram
Chromate Lead 1 " ^{low resist}
P. B. Carb $\frac{1}{2}$ " ^{a short circuit}
1,10

9 Copper oxide 1 Gram
Red Lead 1 ^{low resist}
P. B. Carb $\frac{1}{2}$ ^{dit} Chrom
250,000

Do & same as 9 only dry Chrom
Marked but made 250,000
lamps dim and spotted
at gradual

Made double barrel tube with
cup on end, filled with Copper
oxide and carbon fused top
short with anhydrous Boric
acid

1 Mixed Copper Oxide ^{2.50} 14
100 3 Grams

L. B. Carbon.

put in cup

$\frac{1}{4}$ 11

Resist

this dried in 100 Volts, but
not enough to work through tube, I have
in which to clamp

Ohms 250,000

Made same solution and

Dried in Bunsen burner measured 352

The same Dried in Drying oven
before sealing

dried on 100 Volts, I broke in and it
dried through tube

Ohms 7300

Mixed Copper Oxide 5 Grams
L. B. Carbon

put in cup dried in dryer

$\frac{1}{4}$

this dried to a clamp
with did not cure with lamp
in which to clamp

Ohms

30,000

5X $\frac{1}{4}$ mixture, made two.
this ran through tube
measured

20,000

the other this worked
very well

34,000

5 x $\frac{1}{4}$ Mixture

J. 5. Oct 18

Tal

$\frac{1}{4}$ P. C. Carb wet dried
in dryer measured resistance

checked the inside parts
One measured Ohms — 280,000

The other

this checked through tube down & 120,000
inside parts

5 x $\frac{1}{4}$ Mixture

$\frac{1}{4}$ P. C. Carb wet with:

Licorice water

Resist — Ohms 1350

this checked on 100 volts & broke down
checked the inside parts

5 x $\frac{1}{4}$ Mixture

with Licorice water

checked put out lamp two seconds

then came up again, & checked Ohms 580

then checked the inside parts

1. ^{g.f.o} Sep 22 19 86
Copper Oxide 5 Grams Tol
L B Carb — $\frac{1}{4}$ "
Sum Sandarach

2 Copper Oxide 5 g.
Lamp Black $\frac{1}{4}$
Sum Sandarach over 200,000
Atoms

3 Copper Oxide 5 g.
L B
Sum Sandarach $\frac{1}{4}$ after heating 4,100
Over 200,000

4 Copper Oxide 5 g.
L B $\frac{1}{4}$ 34,000
Sum Dragonthol $\frac{1}{4}$ 40,000

5 same resistance after heating 80,000
22,200

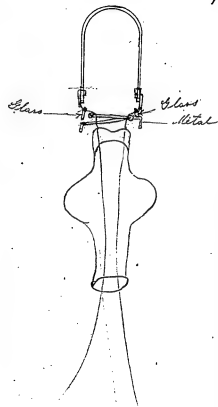
2.5.86 20
Jal
Made glass cup in place
of double tube having
poles spread at bottom
to prevent arc at that end
and make them arc nearest
the carbon

Sep. 22, 86



Sept, 22, 86

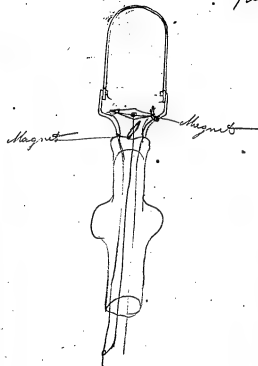
J. F. Ott
To 8



Sept 22, 1886

215.0

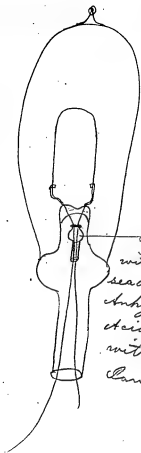
Ta8



Sep. 22. 80

J. F. Otto

Tar.

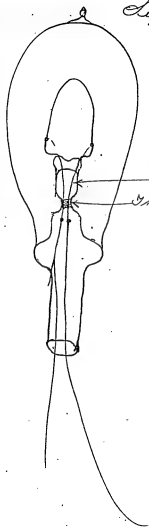


To be filled
with Roffin Oxide
sealed with
Anhydrous Boric
acid, also
with Plaster
Paris

Sep 27 86

J.F.O

Tal



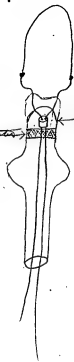
(filled

this to be)

this noted

Sep 29. 86

J.F.O.
TAE



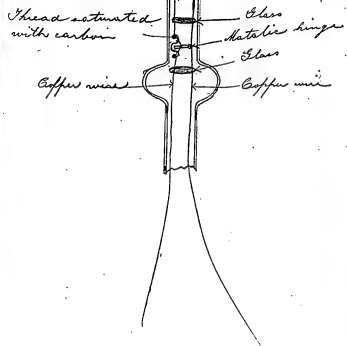
One layer plates,
Lins

This space to be filled
with Coffee Gills
and carbon

Sept 29. 86

J. F. Ott

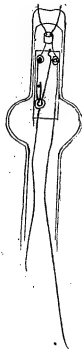
T&E



Sep 30 86

J. F. Otto

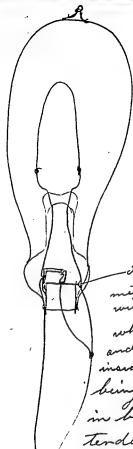
Ta9



Sep 30, 86

J. F. O'H

T. O. R

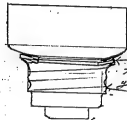


Rubber or
metal diaphragm
with hook catch
when lamp dies
and burns through
insides part, then
being a vacuum
in bulb the
tendency is to
draw the diaphragm
in and hook will catch
and short circuit the
thus establishing the line

Sep 30 1906

J. F. O'H

Tag



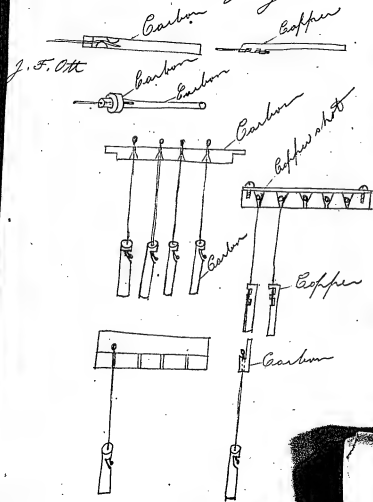
Brass thimble

Leather washer

this is to prevent metal
getting to leather
Brass screw

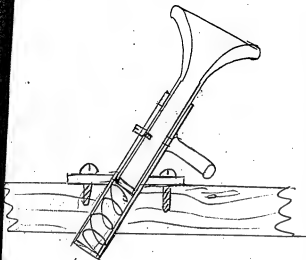
Nov 10 86

Clamps for holding round
fibers for carbonizing



J. F. O'H

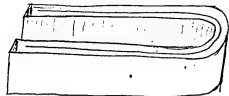
Nov 17 86



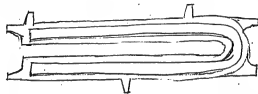
Valve for blowing
bulbs

Nov 23 86

Hold for Carbonizing
J. F. Otto



Filled with Anthracite

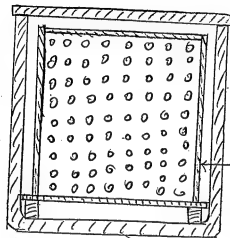


Lid

Nov 23, 86

Carbon moulds

J. F. Otto



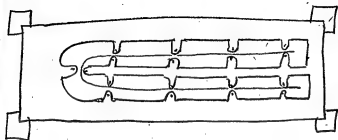
Carbon

Graphite

Nov 23 86

J. F. C. H.

Form for putting
in Carbons into mould



Copper



Carbon

Compound for making
Threads for cut out in
Municipal Lamp

20 C C Lumps

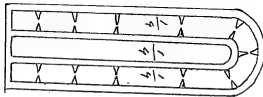
1 E. Asfalt

8 S. Eddys Lamp Black

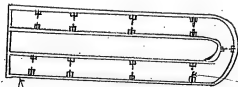
$\frac{3}{8}$ S. Gel Lamp Black

Dec 22. 86

J. F. Ott



Small pieces of Carbon
Stuck on inside of Carbon
Mould with Spanish licorice
to keep fillement in cent
then fill in with coal



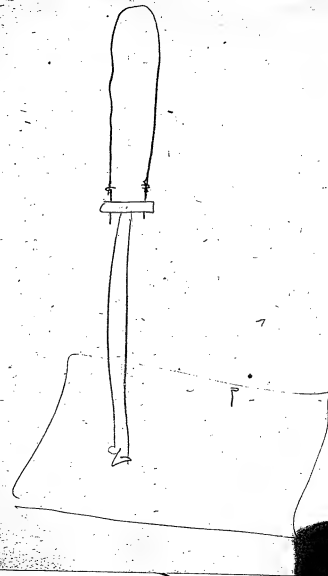
Brass box

Carbon

This prevents the metal from
coming in contact with fillement
~~in contact with fillement would cause~~

it to carbonize sooner than
where it not in contact



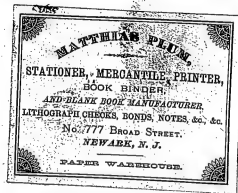


Lamp Factory Notebook, N-86-08-25

This notebook covers the period August-October 1886. Most of the entries are by Ezra T. Gilliland. There is also one entry by Edison about telephone experiments. The notes and drawings by Gilliland concern telephones, a railway telegraph and telephone, and phonograph experiments. Included also is a set of undated drawings, probably by John F. Ott, for a village system generator. The spine is labeled "31." The book has been used in both directions. At one end of the book are 50 numbered pages preceded by one unnumbered page. The six pages of entries at the other end of the book are unnumbered.

Blank pages not filmed: 27-50.

N-86-08-25



August 25 1886.

J. S. M.

Telephone Experiments

Try in telephone powdered -

Platinized light charcoal -

Silver plated

Silicon ✓

Tellurium

Sulphide lead -

" Iron
Tin

Calcopyrites,

Following is
Ezra T. Gilliland's
writing.

See also Pg. 18.

N.R. Spence

Page 1

Wednesday Aug 25th 1886

J. S. 1886

Silicon in the L.D. transmitter¹
shows my high resistance, first
that got no results - measured
1800-ohms - Heated the silicon
on short iron pan to dry it
and burn off any organic
matter that may have been
in it and get a better result.
with ⁽⁴⁾ former cups Carbon battery
it talks about $\frac{1}{2}$ to $\frac{1}{4}$ as
loud as a hand telephone -
measured 10,000-ohms -

One pyrites - in No. 1
L.D. talks about $\frac{1}{2}$ as good
as carbon - washed it in
nitric acid improved it a very

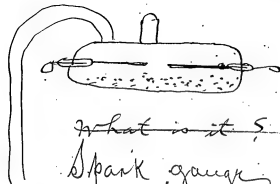
Continued from page 1 - Page 2
measured ohms - J. F. 116

Antimony in #1 L.D. produced
very little results about $\frac{1}{2}$ as
good as a hard telephone
Resistance very low about .01 ohms

Alloy of antimony potas
Tacks about as loud as a
hard telephone Resistance
very high -

Cocoa nut Carbon -
on first test seems to work
better than regular anthracite
Carbon It is much lighter
than anthracite carbon and
instrument has better microphonic

J. S. 1886



~~What is it?~~
Spark gauge

Continued from Page 2 4

-microphonic qualities - J. 5.000

Thursday Aug. 26th 1886

Continue Cocoa Carbon -
Experiments -

Comparative weight of anthracite
Carbon & Cocoa Carbon, the
Cocoa weights a little more
than one half as much -

macaroni Carbon weights about
 $\frac{1}{2}$ as much as as Cocoa
and takes about the same
both Cocoa & macaroni
take loud but do not
articulate as well as
anthracite. Treated the macaroni
Carbon with sulphuric acid
and washed and cleaned it -

Continued from page 44: 5
J. S. 1885

cleaned it, which produced a
slight improvement - not equal
to the standard Carbon -

Third Experiment of shooting
primary; and ^{secondary} with 6 large
hydrogen jars no perceptible
improvement -

Shunts coil with Condenser,
no improvement -

Third Zinc dust no
results - resistance very
high =

~~—————~~

all of the above Experiments
have been tried on short
circuit - now preparing artificial
line upon which Experiments will
be tried hereafter -

Continued from page 5

6

^{J. S. M.}
Tellurium - Acts nearly as
well as standard carbon
it has low resistance
So about ~~4~~ ~~4~~ $3\frac{1}{2}$ times as
heavy as Carbon -

This is by far the best
telling substance we have tried
yet and comes the nearest to
standard Carbon will make
further experiments with
other apparatus -

Page 7

Friday Aug 27/86

J. S. G. H.

manganese peroxide -
no results -

granulated Zinc no results

Zinc is very heavy and
poor conductor - treated Zinc
with sulphuric acid improved
its conductivity somewhat but
not its talking qualities -

Tried regular standard
Carbon with platinum
scrap clippings mixed in
gave good results talked
as well as standard
transmitter

Lignovoice Carbon J. S. 2015
 made fine domestic
 Lignovoice gave and
 vents talked about one
 half as well as standard

Third standard Carbon with
 platinum disc float
 in chamber no improvement
 used dozen different
 sizes and shaped floats -

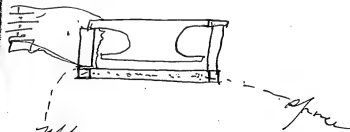


Float

9
Saturday Aug 28th - J. S. M.



Works good but
no better than standard

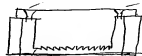


upper diaphragm (connected)
with upper electrode -

works very well but no
better than standard

Continued from page 9 -

10



Rule for filling
J. S. Lott

Corrugated electrode the object
being to prevent the ~~xxx~~ granulated
material from creeping away
from the center of the diaphragm -

This worked splendidly and is
my decided improvement
upon the regular standard form -
further experiments will be made
and a test that will be made to
determine its staying qualities -
its holding qualities are
superior (as far our tests
have gone -

Used powdered Feldspar
~~xxx~~ coated with plumbago

Continued from page 10 . 11
J. E. 105-

no results - Third says could
with plumbago. ticks about
same as a hand telephone -

Wednesday Sept 1st 1886

made series of tests to
determine lasting qualities of
the new corrugated form of
Electrode found that it was
somewhat longer and come
down near the Diaphragm
which partly accounted for
its increased loudness
in test experiments -

It shows a marked
improvement however -

Carbon made from vegetable
Iron works about as well as

J. S. 1886 ¹²

regular standard carbon

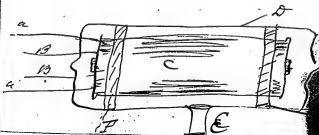
It is about as clean but
not quite so bright
weights

Thursday Sept 2 1886

Tested carbon made of pitch
tells about same as hard
telephone is very light so
much so then when cap is
removed from top of transmitter
and when speaking in a loud
tone of voice the carbon
will pour out of the holes in
the Edisiphone rising up $\frac{1}{2}$
 $\frac{1}{2}$ of an inch like water
out of a fountain we feel

Continued from page 12
J. S. 004 13
well convinced that light carbon
is not as good as the heavier
or at least heavy enough to
fall back into position as
to respond to rapid vibrations
and ~~be~~ ^{not} be thrown up and
held suspended in space =
tested carbon made from
impure lignosize slight
improvement over domestic
lignosize but not does
not compare to standard
Carbon -

Cell in Vacuum -



Continued from page 13

J. F. Ott
Description arrangement of coil
in vacuum shown on
page 13

a a ~~primary~~ secondary connections
or leading in wires of primary
circuit of coil -

B B ditto for primary

C - coil

D Glass tube

F F Hard rubber rings
to hold coil in
position in tube -

E opening in coil
for exhausting the air -

15
The quality of anthracite ^{carbon} ~~used~~ ^{made}
heretofore has ~~J. F. 1885~~

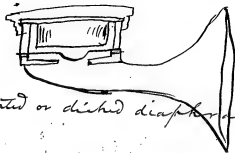
The quality of the anthracite
coal used to make the
Standard Telephone ^{grapholite} Carbon
has been poor having
been taken from the supply
of coal furnished for
steam purposes -

Suggest procuring of highest
quality of anthracite coal
let it be hard and
glassy and pressure
the quality of carbon will
be greatly improved

Friday Sept 30 1886 -

16

J. F. Allen



Corrugated or dished diaphragm



Corrugated Electrode dished diaphragm



Corrugated Electrode and
Corrugated diaphragm
Corrugations made to correspond

Sept 30th 1886

17

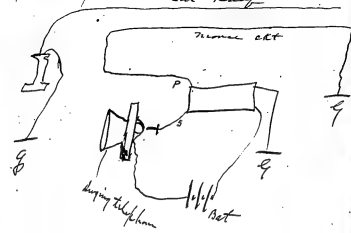
Railway T & T Experiment.

Set up and tested the

Edison arrangement of
using a singing telephone
with cushion contact as a
substitute - for the automatic
vibrator - It worked first
class - another was made
and forwarded to Budd
for practical test on
the train on Chi St P
& Mil RR. The
device was made and

Continued from page 17 18

Set up as shown in the
following sketches—
can keep



Exp

~~Sept~~ October 5th 1886 ¹⁹

Commenced work on the standard
Phonograph - Plan is to make
a small compact instrument
suitable for office use. It is not
expected that it will talk loud but
is to be made to be heard to the
listeners ear like a
telephone and to be made
to talk about as loud
and clear as a good
telephone on a short circuit -

Is to be driven by a small
motor, probably an electrical motor,
and so made that it can be
readily stopped and started

Continued from page 19

20

and started and backed up or
reversed or set back - motors to
be arranged to run as near as
possible a uniform speed
and have a simple or automatic
regulating device to control
speed.

The greatest height of perfection
will be to make cylinders or
or plates containing the record
interchangeable, i.e. a talking
record made in one machine to be
transferred and reproduced in
another machine - although
the machine will have great
commercial value ~~even~~ if this
cannot be accomplished -

Continued from page 20 21

The cylinder should be about ~~two~~
1 inch to $1\frac{1}{2}$ inches in diameter
made of glass or polished steel
should be about 4 or 5 inches in
length and have 40 to 50 threads
to the inch this will give it a
Capacity of about 10,000 words based
on $1\frac{1}{2}$ diameter or 5 in in circumference
50 threads to inch would be 250 miles
to inch of cylinder in length, 5 in
long would give ~~the~~ 1,250,000 inches
to the cylinder with say about 8 to 10
words to the inch or 10,000 words
to the cylinder - I believe that
diaphragms and needles or points
can be made ~~as~~ as cheap and
simple that they can always
be a part of the cylinder.

and removed from the machine with the cylinder and thereby we accomplish interchangeability, as there is no difficulty in repeating many times the record made if the point and diaphragm are not disturbed.

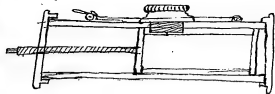
A cylinder its thread and diaphragm & point can be the detachable portion of a machine, and the running gear and motor and all other parts can be contained in the stationary part or balance of the mechanism.

The motor should be connected through the medium of a flexible shaft to prevent the buzz or jar being communicated to the Phonograph. This will also make the apparatus more

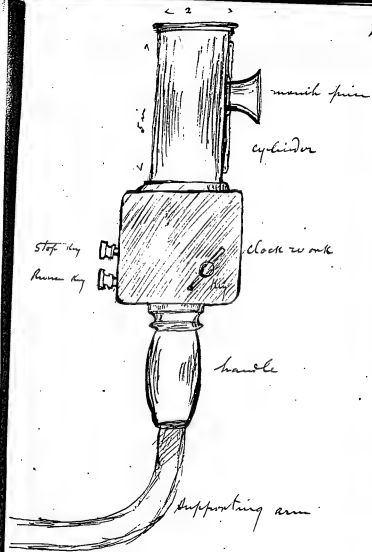
Convenient to use providing it is made a size that will admit of its being held to the ear to listen and to the mouth to talk to it, in case it cannot be made light enough to admit of this then a flexible speaking tube can be used for talking into and listening, in this event the jarring sound of the motor will not be as likely to interfere -

The cylinder should be made of polished glass or metal and the substance that receives the shock or vibration should be either a shellac, gum or wax or something of that nature which can be applied with a brush or by dipping into a liquid solution and allowing it to dry on and can be

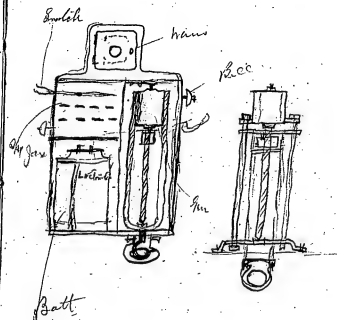
discolored off and thereby prevent
any scratching or injury to the
cylinder and be cheap and require
no special skill or devices to
accomplish this most important
part of the work - Gums or
shellacs or substances of that
nature will be less likely to produce
the scratching sound which has been
such a serious trouble in the use
of tin foil. If the diaphragm
& needle are made to always be
kept together then the cylinder
can be prepared by the Phonograph
Company or ^{their} experts and furnished to
the customers and a rental charged
and a continuous record derived -

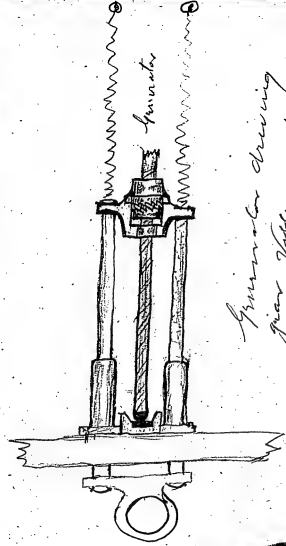


Plan for cylinder drop frame and
 joint screw and bearings to always
 to kept together end of screw
 has square or other means of
 connecting it to the motor -
 the cylinder gets its bearing on a
 rim or flange located at each end
 which is made to exactly fit the
 bore of the casting which
 holds the mouth piece - The mouth
 piece is made to adjust by
 revolving it is also fitted with
 a device for lifting it when cylinder
 is to be cut back to ~~starting~~ point

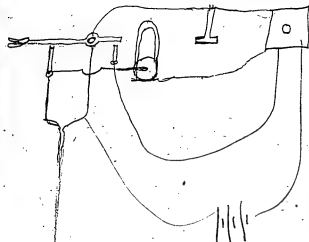


Vallignat System

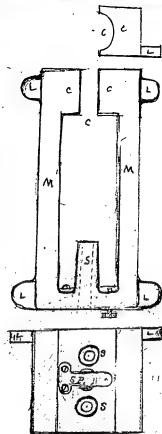




Sprinkler driving
 gear through system
 in Rucersand train
 April -



Corrections Velling
System

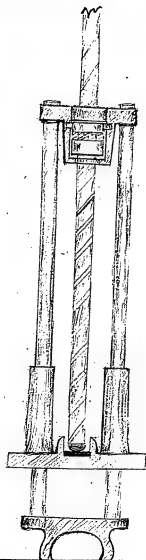


C cylinder
 MM magnet
 SS sheave
 ST shaft
 L Lugs

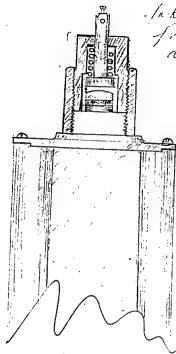
S.P. phos. shot
 large spring for
 shaft and automatic

Generator Frame
 of Cast Iron

Gravator being
grasped
in full view



Cylinder head
of generator showing
arrangement for
taking current
from end of
armature.



Lamp Factory Notebook, N-86-10-05

This notebook covers the period October 1886. The entries are by an unknown laboratory assistant and relate to carbonization experiments for lamp filaments. The experiments are numbered 1 through 11. The spine is labeled "33." The book is unpaginated.

Experiments on Carbonizing in
sealed tube.

Exp. 1st 1:- Bamboo splint in sealed
tube in H_2O colored with Aniline Violet.
@ temperature of 300° Fahr. (gradual rise).
Carbonizing imperfect; color penetrated
about $\frac{1}{8}$ through the splint.

Oct. 5th 1886. Object - to drive
the color through the filament.

Exp. No. 2. - Same conditions as
No. 1 - - temperature 70° Fahr. (gradual rise)
Carbonization complete.

Oct. 6th 1886.

Oct - 7th '86
Exp. A^o 3. One oz. A. Fiber in sealed
tube, in coal-tar, raised to a temp.
of 700° Fahr. - (gradual rise). Tar driven
through filament. Filament received
good preliminary carbonization
sent to Carbonizing Dept. for
final carbonization as Order A^o.
Oct. 7th 1886.

Exp. No. 4.

10/ 8/86

Twenty-four reg. H. fibres in
a sealed tube, in coal-tar, (same as
No. 3), raised to Temp. of 700° Fahr.
Hot carbonized - tar driven into
fibre. Sent to Carbanizing Dept.
as Order No. (12 fibres) Oct. 9th /86.

N^o. 6.

10/9/86

Fibre in Carbon Junc immersed
in molten lead for five (5) minutes.
Carbonization imperfect.

Oct. 9th /86

N^o 6

10/9/86

One Bamboo Fibre immersed in
molten-lead just below the boiling
point, for five (5) minutes. -

Carbonization good.

Oct. 9th 1886.

2) Eighteen Bamboo fibres in forms, immersed
in as above. Lead came in around
fibres. Gave 3 to 5 forms.

Oct. 11th 1886

3) Eighteen fibres in forms, same as
above, only wire paper put between
forms to keep lead out. Gave 14 to
20 forms.

Oct. 11th 1886

No. 7

Four Bamboo fibres in sealed
glass tube, in coal tar. Raised to
temp. of 700° Fahr.; cooled down, then
raised again to 700° , and kept there
30 minutes. Gave 2 fibres to Jones.

Oct. 11th 1886.

N^o 8.

Eighteen Fibres in sealed glass
tubes; in molasses. Gradually raised
to temperature of 500° Fahr, and
kept there one hour.

Molasses forced into fibres.

Gave to force 10 fibres.

Oct. 11th 186.

No 9

15. Reg. A. Carbon in sealed glass
tube, in Coal tar. gradually raised
to temp. of 700° Fahr.

Oct. 14th 1866

N^o 10

Carbonized in Lead:—

Bamboo Fibres in carbon box, covered
with carbonized Anthracite.

Temperature gradually raised
to melting point of lead: then
raised quickly to a white-heat.
Retracted three carbons to force
Oct 15th 186.

(2)

In same box, subjected to same
process, were some preliminary
carbons. In neither case did
lead touch the filaments.

Retracted two carbons to force
Oct 15th 186.

N^o 11

Cartonized in Lead:-

1) Bamboo Fibres, in carton box
covered with lead-filings.

Temperature raised gradually, re-
quiring (2) hrs time, to bring it to
the melting-point of lead:- then
raised quickly to a white heat.

Oct. 18th 186.

2) In same box, subjected to same
process were ~~not~~ preliminaryzed
fibres.

~~Rel. two cartons to Free~~

Oct 18th 186

Relivered to Free, four
cartons, run through as above.

Oct 21st 186

Oct-15 to 30
1896

1. Tar, Asphaltum + Eucal. Plumbago, mixed
with Benzole to stiff paste.

Tar + Molasses

" " " " + Plumbago + Anthrac. coal

Tar, Plumbago + Vaseline

2. Tar, Plumbago + Shellac.

Tar Plumbago, Anthracite + Vaseline

Soap + Plumbago

Carbonized by sunbake in air.

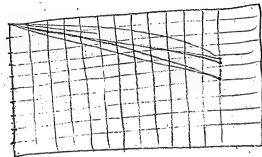
3. Asphalt. Lamp Black + crocoth.

Gum + Catichin, Lauegal, asphalt.
Plumbago (sprinkled) mixed with
Benzole to stiff paste - paper

4. + Tin foil envelopes

Lamp Factory Notebook, N-86-10-08

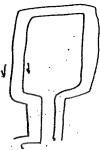
This notebook dates from October 1886. All of the technical entries are by Edison and relate to armature design and to carbon treating experiments for lamp filaments. Many of the pages were used to record the names and addresses of various suppliers. A few of these entries are in Edison's hand. The remainder are in the hand of an unknown laboratory assistant. The label on the spine has been torn and the number is missing. The book contains approximately 200 unnumbered pages. Numerous pages have been torn out of the book.



$\frac{1}{64}$ 16 1
 33 9 59-
 7 48-
 2

$\frac{18}{70}$
 126

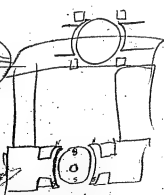
1200



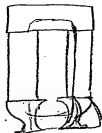
$\frac{203}{203}$

203

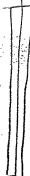
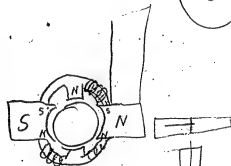
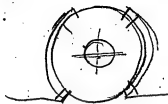
Wabash
 Valley Ranch

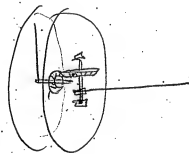


Christianity



6
1.50





$$\begin{array}{r}
 140 \\
 15 \\
 \hline
 700 \\
 140 \\
 \hline
 2100
 \end{array}$$

16.

$$\begin{array}{r}
 2000 \\
 4050 \\
 \hline
 8000
 \end{array}$$

$$\begin{array}{r}
 140 \\
 56 \\
 \hline
 2240 \\
 8960
 \end{array}$$

$$\begin{array}{r}
 200 \\
 400 \\
 \hline
 800
 \end{array}$$

$$\begin{array}{r}
 .75 \\
 37 \\
 \hline
 218
 \end{array}$$

$$\begin{array}{r}
 8960 \\
 8000 \\
 \hline
 2160000 \\
 2560000 \\
 \hline
 2688000 \\
 128000 \\
 \hline
 881400 \\
 318400
 \end{array}$$

Oct 8 1886 Vol -

Boil 15 Carbons in strong
 KO solution for one day
 then Boil in large quantity
 H₂O for 4 hours then change
 water again & boil 4 hours
 then take out & put in
 heater, dry and put in
 order No 20 & Boil for
 3 days - then Carbonize

do the same with the
 HPP acid carbons now
 Soaking -

Oct 8. 1886 Tar

Wash 3 lamps in Chloride
Barium Sal. weak - to precip
the SO_4 from clamps. -
work & set up for life -

Transverse carbon & clamp
in gasoline & use another
wire to form an arc and clamp
so as to decompose CuSO_4
& also the oxide - think it
will remain bright afterward

Oct 8 1886 -

Use precipitated Magnesia
aluminum - precipitate
from very dilute solutions
so as to get them exceedingly
finely divided -

Mix the dried precipitates
with - 1st Sugar solution,
Licorice Gum arabic, Tar,
Malasses, Honey, gum Tragacanth,
press through mould into
filaments. Try Linc
mixed with the above also
(staked linc)

Oct 8 1886

Put piece, asphalt in side cup
with U tube, ~~heat~~ get vac
Get it off from lamp get vac
then heat asphalt, + let
gas in -

Pour ammonia
prepare N. heat salt
of Ammonium Nitrite

also intimate mixture of
Chl Ammon + Bichrom K
this gives on heating
 H_2O + pure N - put
in cup on U tube,

If a Formate be treated
with Conc SO₄ pure CO
given off -

Ferrocy K heated with $\frac{1}{2}$ O₃
heated with 4 or 5 O₃ SO₄
pure gas - care must be
taken as at certain point
gas comes off almost
Explosively -



Oct 9 1886

Gases to be used as residuals in
the fit lamp -

Arsenimethid. Hydrogen

Bromine,

Bromohydric acid gas

CO

CO₂

Cl

HCl

H

Iodine

Hydrochloric acid

Phos Hydrogen

Sulphuretted Hydrogen

Selenuretted

Telluretted

Boron Trifluoride

Barium Fluoride

Bromine Fluoride

} is a gas

Hydrofluoric acid gas

Sulphur Difluoride. Volatile Liquid

Silicon hexafluoride Volatile

Silicon Tetrafluoride gas

Arsenic Trichloride. Liquid

~~Chlorine~~

Ferrous Chloride - Volatile

Ferric Magnesium Chloride - Volatile

Nickel Chloride sublimis

Phos Trichloride, Boiling pt 76°C

~~Phos~~ Chloride Selenium. Volatile Liquid

Silicon Tetrachloride, boils 50°C

Uranium Tetrachloride, Volatile

Nitrogen Tribromide, Very Volatile.

Zinc phosphide. Volatile;

Hydrogen Silicide H_4Si gas

Chlorobromide Silicon Liquid

Phos Chlorobromide. Boils. 90°C

Nitrous acid

Nitric acid

Titanium tetrachloride. Boils 135°C

Titanium Tetrachloride Liquid

Tribromide Boron boils 90°C

Silicon tetrabromide Boils 150°C

~~Silicon~~ ^{tetra}
Zirconium Bromide Easily
volatile heat gas flame

Chlorobromide Silicon Boils 100°C

Titanium Chlorobromide " 160

Silicon Chloroform HSiCl_3 Boils 37°C

Hydrogen silico chloride Liquid

Itano-phosphor chloride Melts 85

Silicon ydiform HSiY_3 Boils 220, Liquid

Defiant gas Ethylene gas

Acetylene gas

Propane gas

Butylene

Merbane -

Ameline oil

Benzol

Benzene

amyl

Kerosene

Essential oils -

Ether

Camphor

Creosote

Carbolic acid

Turpentine

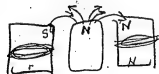
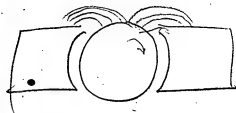
Camphene

Naphtha

Heat Resins

Chloralhydrate

Monosulphide Carbon - (Solid)



A. Achard Rue de
60 Rue de Provence Paris
France

General agent of Electricity
Agence Générale d'Electricité
Passage des Panoramas, galeries Variétés
Paris France

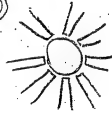
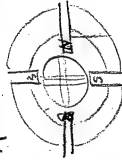
A. Alily
33 and 33- Boulevard Temple 33
Paris France

Société anonyme de l'Aluminium
Boul Poissonnière 21 Paris France

M. Anthony Rue de Rouigo 39.
Alger
France

Association Générale de Ouvriers
en Instruments d'Optique.
Rue Pierre-Sevée 2 Paris France

Ateliers Ducommun
Boulevard Magenta 18
Paris France



Catalogues with price list

J & Minto & Co

Clinton Road Bow London

Wm Reid & Co

5 New London St
London EC

Geo Stiff & Sons

High St Lambeth London Eng

John Warner & Sons

Cripplegate London EC

Frederick Allen & Sons

Upper North St Poplar London E

A & M Zimmermann

21 Mincing Lane London EC

Geo Slater & Co ~~West Commercial~~

134 Upper Thames St London EC

Wm Bailey & Son

213 Abchurch Yard Cannon St
London E.C. 4

✓ Jas Wilkinson Trow

Sheffield England 15

✓ Haggan Lloyd & Co

Manchester England 16

✓ Geo Davidson & Co

Gateshead-on-Tyne
England 17

✓ Old Castle Iron & Tin Plate Co

Llanelli, Carmarthenshire
England 18

✓ Jas MacNeill & Co
25 St Enoch Square

Glasgow
Scotland

19

✓ Pierre Balajet

Avenue Du Prado 145

Marseille

France

20

✓ Doulton & Co

High St Lambeth

London SE

England

21

✓ Patent Plumbago & Encaustic Co
Battersea SW

London

Eng

22



v3

Cookson & Co. 26. Philpot Lane EC
Newcastle-on-Tyne England

J. L. & Co.
41 Moorgate St., E. C.
London, Eng.

John Baker & Sons.
Westminster Bridge, S. E.
London, Eng.

Fraser & Fraser
Brooklyn - B. B. B.
London, E. Eng.

Smith, Thomas & Co.
Ferry Road -
Old Kent Road, S. E.
London, Eng.

Chance Bros. & Co.
24 Finsbury Circus, E. C.
London, Eng.

James Powell & Sons. 29
Temple St. Whitefriars, E.C.
✓ London, Eng.

~~Hydraulic Engineering Co.~~
~~131 Palace Chambers.~~
~~Westminster, Bridge St.~~
~~Westminster S. W. London, Eng.~~

Tyler, Hayward & Co. 30
84 & 85 Upper Whitecross St, E.C.
✓ London, Eng.

Hydraulic Engineering Co., 31
131 Palace Chambers,
Bridge St., Westminster S. W.
✓ London, Eng.

Dring & Page
19 & 20 Tooly St. S. E. 31
✓ London, Eng.

Gebhardt, Rottmann & Co
~~24 Lawrence, East Lane~~
24 Lawrence Lane, E. C. 3
✓ London

James Hicks -
8 Hatton Garden, E. C. 3
✓ London, Eng.

James Hughes
104 Minories, E.
✓ E. London, Eng. 31

Theodore KieSSLer
361 City Road, E. C.
✓ E. C. London, Eng. 36

J. Levi & Co.
✓ 42 Castle, Culbourn. E. C.
E. C. London, Eng. 37

Gustave Men.
29 King Square, Goswell
Road, E. C. 1 ✓ E. C. London. 38

Fredrick Newton & Co.
3 Fleet St. E. C. 39
✓ E. C. London.

Robert Nicholl
✓ 53 Holborn - W. 40
W. London.

John Amer 41
99 Minories, E.
S. London, Eng.

John Ottway & Son, 44
178 St. John's St. Road, E. C.
London.

~~Frank~~
Pastorelli & Raphael 43
46 Hatton Garden, E. C.
London.

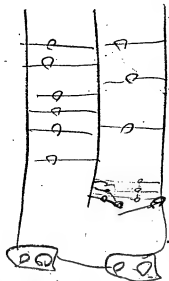
Alfred Sloper & Sons, 45
42 New Kent S. E.
London.

Société des Luchiers 45
13 Hatton Garden, E. C.
London

William Stone 46
44 Gloucester St. W. C.
London.

G. W. Stammers & Co. 47
9 Pancras Lane, E. C.
London -

Tisley, Spiller & Co. 48
172 Brompton Road, S. W.
London.



$$\begin{array}{r} 1250 \\ 2 \\ \hline 2500 \\ 1600 \\ \hline 4100 \end{array}$$

$$\begin{array}{r} 32. \\ 600 \\ \hline 19,200. \end{array}$$

10. 30

$$\begin{array}{r} 15- \\ 16 \\ \hline 90 \\ 15- \\ \hline 24. \end{array}$$

$$\begin{array}{r} 675- \\ 30 \\ \hline 2025- \end{array}$$

$$\begin{array}{r} 2700 \\ 1600 \\ \hline 43.00 \end{array}$$

$$\begin{array}{r} 9 \quad 27 \\ 600 \\ \hline 16200. \end{array}$$

$$\begin{array}{r} 1350 \\ 2 \\ \hline 2700 \end{array}$$

43. 20

$$\begin{array}{r} 675- \\ 43 \\ \hline 432025- \end{array}$$

$$\begin{array}{r} 30 \\ 60 \\ \hline 1800- \end{array}$$

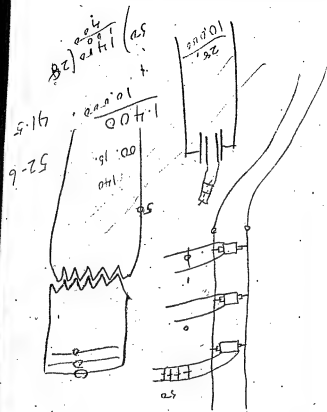
6

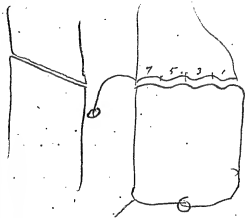
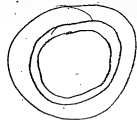
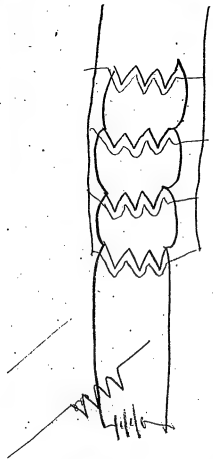
$$\begin{array}{r} 675- \\ 43 \\ \hline 2025- \\ 2700 \\ \hline 29025- \end{array}$$

SS

91

9-





Trafalgar Works Company
Trafalgar Road, Old
Kent Road, S. E. 59
London.

Edwin Richards Watts
123 Cambridge Road, S. E. 50
London.

J. St. West & Co.
92 Fleet St. E. C. 51
London.

John Wimple 54
169 Chadwell, High St. E.
London.

Alfred Holmes 53
76 Shacklewell Lane, E.
London

Henry Cuth 5
68 Barbican, E. C.
London

Aston & Mander 55
25 Old Compton St. W.
London

R. & J. Beck
68 Gorn Hill, E. C. 56
London.

George Bendow, & Co.
36 Ely Place, E. C. 17
London.

Alexander Clarkson
28 Bartlett's Building 56
Holborn, E. C. London.

John Henry Dellmeyer 14
13 Bloomsbury St. W. C.
London.

Joseph Davis & Co. 60
6 Kensington Park Road, S. W.
London.

James Skeais & Sons 61
Bayside Southwark
London.

Clark Warnehead & Co. 14
20 E. Regency St. S. W.
Westminster, London.

Johnson & Phillips ^{b2}
16 Wynd Court.
Old Broad St., E.C. London.

Octavius Harley ^{b2}
Mil~~l~~may Ave, Wildmay St. N.
London.

E. P. & W. Baldwin ^{b1} ^{Et}
4 Corbet Court, Grace Church
E.C. London.

~~C. W. W.~~ ^{b6}
Cromfelin, Tin Plate Co.
~~117~~ Leaden Hall
✓ 117 Leadenhall St. E.C.
London.

H. Erhardt & Co. ^{b7}
9 Bond Court, Wallbrook
E.C. London.

Guinos Tin Plate Co. ^{b9}
101 Leadenhall St. E.C.
London.

Shemwell and Co. 60
Bridge Road
Stratford, E.
London.

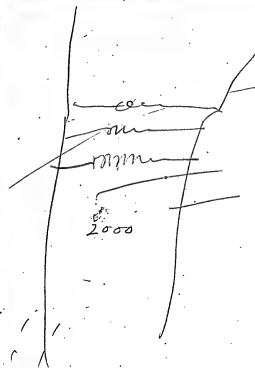
Webb, Shakespeare & Williams
3 George Yard, Lombard
St. E. C. 70
London.

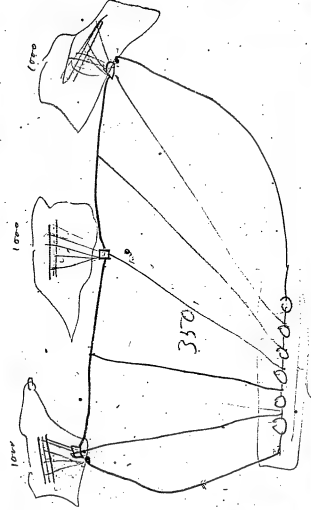
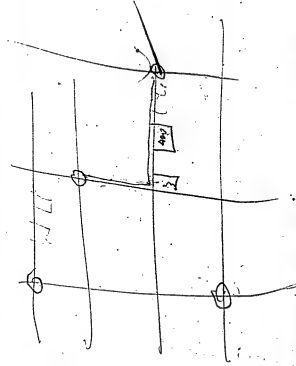
Charles Knodsham
84 Strand, W. C. 71
London.

Thompson & Vine 72
118 Aldersgatest, E. C.
London

John Fletcher & Son 73
Booth St.
Salford, Manchester
Eng.

Rand, Drill Co. 74
Parkrow New York





Lewis Solomon 71
216 Pearl St.
✓ New York.

Henry C. Porter 76
71 Maiden Lane
✓ New York.

Julius Kaldenberg 77
125 Fulton St.
New York.

Kohnstamm & Co. 76
126 Chambers St.
New York.

John B. Wade 79
40 Murray St.
New York.

John J. Schillinger 80
111 Broadway
New York

Portland Cement Stone Co.
214 Pearl St. 81
New York.

Robert Gilmore
78 John St. 84
New York.

H. W. Johns, Mfg. Co.
87 Maiden Lane 83
New York.

Swiss Asphalt
Rock Co. 82
79 Maiden Lane
New York.

William H. Childs
73 Maiden Lane 81
New York.

J. & H. Burge
95 John St. 86
New York.

Alcorn & Co. 87
456 Hudson St.
New York.

Newcomb Bros. 88
586 Water St.
New York.

New York Belting and
Packing Company 89
37 Park ~~Road~~ Row
New York.

John Dwight & Co. 90
11 Old Slip
New York.

Gantz, Jones & Co. 91
176 Duane St.
New York.

Butler & Butler 92
6 Great Jones St.
New York.

S. Oppenheimer & Co.
96 Pearl St. 93
New York.

Howard & Morse
45 Fulton St. 94
New York.

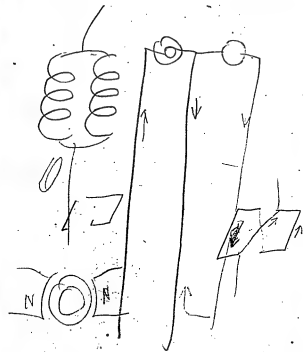
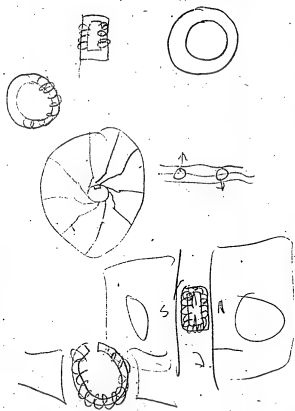
Edward A. Boyd.
79 Murray St. 91
New York.

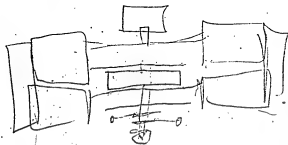
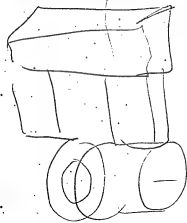
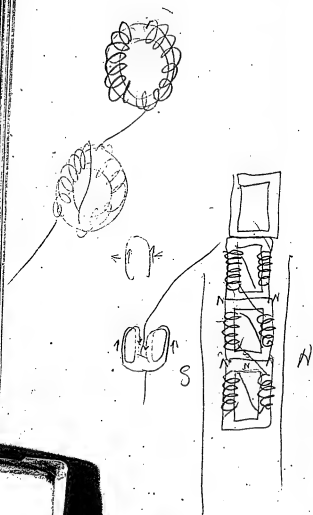
Bernhard Budde 96
50 Vesey St.
New York.

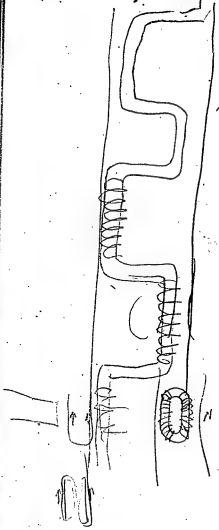
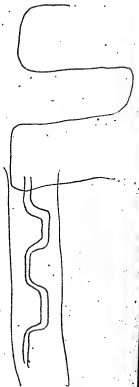
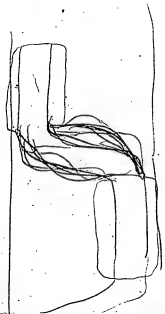
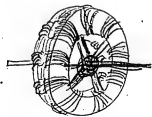
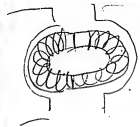
M. E. Nade & Harlin, Mfg. Co.
56 John St. 97
New York.

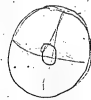
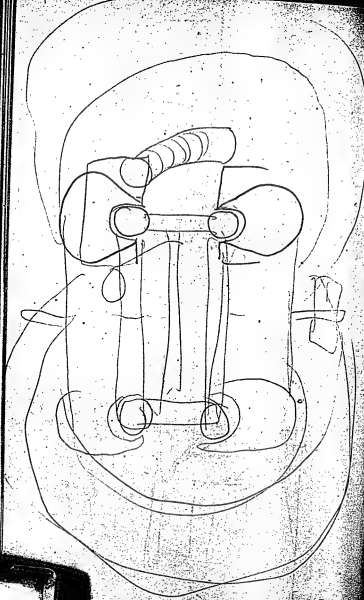
John H. Knapp. 98
17 John St. New York.

Howard
Wallace & Sons 99
89 Chambers St.
New York.







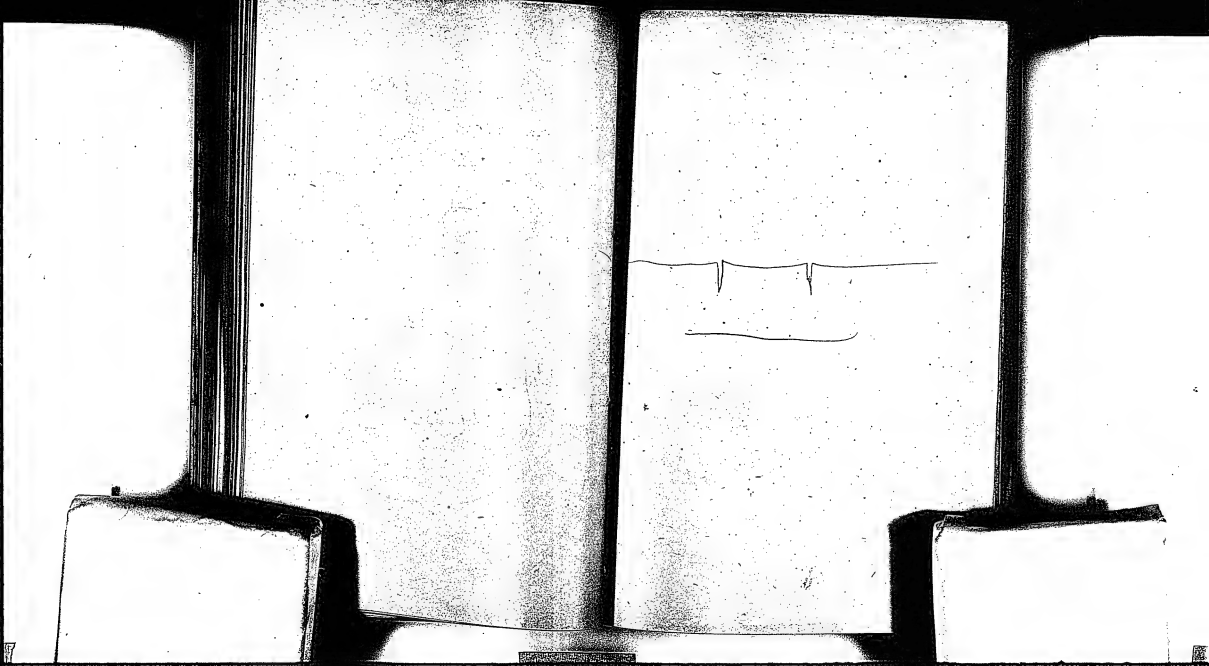


8.

$$\begin{array}{r}
 10. \\
 1000 \\
 12 \overline{) 1.0000} \quad 8.33 \\
 \underline{96} \\
 40 \\
 \underline{40} \\
 0
 \end{array}$$

$$\begin{array}{r}
 300 \\
 8 \\
 \hline
 2400.
 \end{array}$$

$$\begin{array}{r}
 12 \quad 12 \\
 200 \\
 \hline
 2400.
 \end{array}$$



Waterbury Brass Co. 100
296 Broadway
New York.

Edward Miller & Co 1
35 Warren St
New York.

Plusni & Atwood, Mfg. Co.
18 Murray St
New York

Brown and Bros
81 Chambers St
New York

Holmes and Briggs, Mfg. Co.
63 Duane St
New York.

Steele and Johnson, Mfg. Co.
78 Reade St
New York

William Lullase
409 Pearl St.
New York 6

Lewisohn Bros.
487 Broome St
New York 7

L. Brandeis & Co.
133 Williams St
New York : 8

Florence Mfg. Co
19 Mercer St
New York 9

New York Brush Co
243 Pearl St
New York 110

John H. Hoffhell
315 Pearl St
New York 11

Bradley and Smith
251 Pearl St.
New York 12

C. P. Stagg & Co.
43 Park Place
New York 13

Butler and Huntington 15
53-Dex St.
New York

R. & F. Corbitt 11
87 Chambers St
New York

Hugganin Mfg. Co. 16
166 Chambers St
New York

Williams, White and Church 17
- ill
55 Warren St
New York

Flechtman and Glade 18
206 Canal St
New York

Hammacher and Co. 19
209 Bowler
New York

J. Copcutt, Lohr & Co. 20
440 Washington St
New York

Hawes, Gillard & Co
212 Lewis St
New York 1

A. L. Rappand Sons
90 Walker St
New York ✓

Barbour Bros.
134 Church St
New York 3

John Irvine
288 Greenwich St
New York 4

George L. Rose
18 Spruce St
New York 5

Fredrick Bychner
5 Chatham Square
New York 6

L. Elmore and Richards
4 Murray St
New York 7

Lewis K. Bell
56 Pine St
New York

8

James R. Dey
66 Courtlandt St
New York

9

Edward L. Embree
18 Vesey St
New York

130

H. W. Everett & Co
85 William St
New York

1

Alexander Fries & Bros.
16 College Place
New York

✓

Edward G. Gilkiespie
62 Fulton St
New York

3

William Goldstein
450 Cherry St
New York.

4

Otto Hannon

7 Burling St. Successor to
Louis Pokorny. New York

Harrison Bros & Co.
163 Fulton St. N. Y.

E. H. Hubbard & Co.
55 Pine St., N. Y.

Kalbfleisch's, Martin, Sons,
55 Fulton St., N. Y.

James Lee & Co.
72 Pine St., N. Y.

Lodi Chemical Works
22 Platt St., N. Y.

Manhattan Chemical Co.
129 Water St., N. Y.

Maynard Chemical Co.
424 Washington St., N. Y.

James Meyer Jr.
48 Platt St., N. Y.

R. L. Mitchell & Co.
141 Water St.
N. Y.

James L. Morgan & Co. 5
47 Fulton St., N. Y.

N. Y. Chemical Eng. Co. 6
3 E. 4th St., N. Y.

N. Y. Dye Wood, Extract and
Chemical Company. 7
161 Front St., N. Y.

G. H. Nichols & Co. 8
99 Maiden Lane, N. Y.

H. Osgood & Co. 9
13 Burling St., N. Y.

Agents for the Bergenport
Chemical Company

Page, Kidder & Fletcher 150
10 Warren St., N. Y.

John Pettit & Bro. 1
240 Pearl St., N. Y.

William Pickhardt & Kuttroff
98 Liberty St.
N. Y.

Pugh & Putney
263 Front St., N. Y.

Lewis H. Rogers.
236 E 12th St., N. Y. 4

Charles H. Rutherford
26 Liberty St. N. Y. 5

Henry Snyder
574 Nine St. N. Y. 6

Walter C. Tiffany
150 Nassau, N. Y. 7

Fred. Toussaint
Mott Ave. c. 144th St., N. Y. 8

William H. Trippe
87 Walker St. N. Y. 9

Visscher & Hall
96 Wall St., N. Y. 160

Walton Chemical Co.
205 Prince St., N. Y. 1

George E. White
109 Front St., N. Y. 2

Edward M. Willit
549 W. 34th St. N. Y. 3

Wing & Evans
93 William St. N. Y. 4

E. J. Beggs & Co

147 Maiden Lane, N. Y.

Billings, Clapp & Co.

58 Maiden Lane, N. Y.

George Binns

5 Gold St. N. Y.

Bloede and Rathbone

15 Cedar St. N. Y.

Frank Crosby

66 Sixth Ave., N. Y.

John H. Curry

200 E. 29th St., N. Y.

Dibblee and Co.

132 1/2 Broadway, N. Y.

Diecker & Foster

157 1/2 Birch St., N. Y.

John C. Draper

429 Lex. Ave., N. Y.

J. G. Draper

15 Cedar St., N. Y.

Henry Edgar

1629 Hudson St., N. Y.

Eidensalz Chemical Co.
120 Liberty St., N. Y.

John Eikenkrach
34 Platt St., N. Y.

L. Fleichthagen & Co.
16 Dey St. N. Y.

William E. Eldstone
1227 B'way, N. Y.

Frederick H. Heeking
221 Pearl St., N. Y.

Hiscox & Co.
163 William St., N. Y.

Augustus Hurd
22 New Church St., N. Y.

Henry F. Jarrett
106 Ave. C., N. Y.

Martin Kalbfleisch's Sons
58 Fulton St., N. Y.

B. Keith & Co.
41 Liberty St., N. Y.

King and Hunt
197 Pearl St., N. Y.

Picture frames:

Fans -

Buttons,

Clock Cases,

Decorating.

~~Paints~~

Patting platinum foil

Tile,

Brilliant cases,

Watch Cases,

Combs

Charles H. Kraft.

18 Exchange Place, N.Y.

D. Langley's Son & Co.

8 Cooper Union, N.Y.

John E. Lawer

174 Pearl St., N.Y.

Hypolite Leryasseur

587 E. 11th, N.Y.

Mass Schleicher & Co.

6 Gold St. N.Y.

James Meyer Jr.

87 Broad + 48 New St. N.Y.

J. L. Milne & Co.

70 New Church St. N.Y.

Fried. Muspiller

195 Duane St., N.Y.

Fried. Oakes

34 Dey St., N.Y.

Charles C. Parsons

542 E. 20th + 34 Pine St.
N.Y.

J. C. + D. Pennington ¹⁹⁰⁰
5 William St. N. Y.

Charles H. Phillips ¹⁹⁰⁸
2 Platt St. N. Y.

Lawrence P. Pircey ¹⁹¹⁰
62 Church St., N. Y.

Porter, Stanley + Co. ²¹
155 Broadway St., N. Y.

Reed and Carnrick ²⁵
196 Fulton St., N. Y.

Scott + Bowne ²²
125 Hudson St., N. Y.

George H. Smith + Co. ²⁰³
156 Maiden Lane, N. Y.

Hildeny + Co. ²⁰¹
24 Liberty St., N. Y.

Townsend, Wilson + Co. ²⁰¹
38 Murray St., N. Y.

Urban Adolph ²⁰⁶
497 Kent Ave., N. Y.

James E. Walker & Co. 208
✓ 5 Rector St. N. Y.

William R. Warner & Co. 209
✓ 33 John St., N. Y.

Charles T. White & Co. 209 St
54 Maiden Lane + 29 Liberty
N. Y.

D. Douglass Williamson 210
✓ 1 College Place, N. Y.

Winchester & Co. 211
36 John St., N. Y.

Isaac G. Wymann 214
✓ 14 2 Horatio St. N. Y.

Hammill & Gillespie 215
240 + 242 Front St., N. Y.

William Anderson 216
54 Barclay St., N. Y.

E. Cauldwell's Son 217
✓ 76 Warren St.

Oscar Cheesman 218
✓ 74 Warren St., N. Y.

E. T. Conklin

✓ 73 Murray St., N. Y. ²¹⁷

Crystal Glass Co.

✓ 44 Murray St., N. Y. ²¹⁸

Durceny Bros.

✓ 50 Maiden Lane, N. Y. ²¹⁹

Christians Gosport

✓ 233 Third Ave., N. Y. ²²⁰

Geo. A. Hammond

✓ 144 E. B'way, N. Y. ²²¹

John Leach

✓ 60 Barclay St., N. Y. ²²²

~~Theodore Higgins~~

Theodore Higgins.

✓ 180 E. Houston St., N. Y. ²²³

William H. Wilson

✓ 38 Vesey St., N. Y.

James Wiseman

✓ 85 Warren St., N. Y.

George W. Woodward

✓ 42 Murray St., N. Y.

John Blips & Co.
110 Wall St., N. Y.

D. Eggert's Sons
74 Wall St. N. Y.

Samuel Hammond
41 William, opp. Custom H.
N. Y.

T. S. + J. D. Meigs
146 Grater St., N. Y.

John Pettit & Bro.
240 Pearl St., N. Y.

M. Gabriel
205 Pearl St., N. Y.

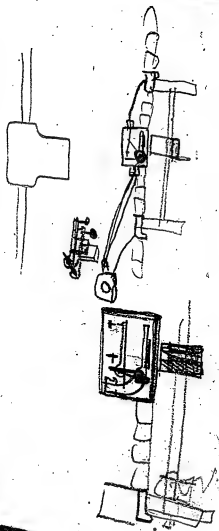
Guy C. Hotchkiss, Field & Co.
624 E. 14th St., N. Y.

Charles E. Little
59 Mutton St., N. Y.

Hendricks Bros.
49 Cliff St., N. Y.

A. C. Keeney & Clarke
54 Cliff St., N. Y.

New Haven Copper Co.
235 Pearl St., N. Y.



Bridgegrater Iron Co.
73 Pearl St., N. Y.

T. Shriver & Co.
333 E. 56 St., N. Y.

D. Allan's Sons
166 Mont St., N. Y.

Cable Filax Mills
113 North St., N. Y.

Louis C. Glover
29 Cliff and 245 Pearl St., N. Y.

A. H. Hart & Co.
90 White St., N. Y.

Williams Walls Sons
113 Wall and 4 Jones La., N. Y.

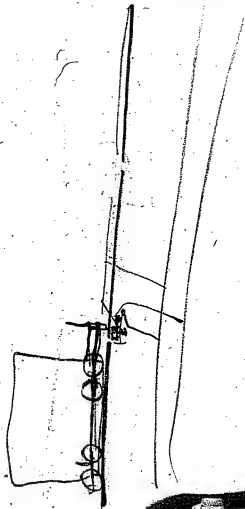
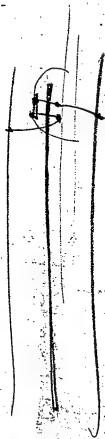
Lawrence Waterbury & Co.
136 Front St., N. Y.

Augustus Collet & Co.
20th St + B'way, N. Y.

Charles Trickert
37 Greene St., N. Y.

John Henry Vogt
421 B'way, N. Y.

Handwritten musical notation on a five-line staff, featuring a treble clef and a series of notes.



J. E. + L. E. Baldwin
45 Fulton St., N. Y.

William H. Godfrey
81 Fulton St., N. Y.

N. Y. Cork Cutting Co.
45 Fulton St., N. Y.

Boera + Co.
101 Maiden Lane, N. Y.

William King + Co.
132 Maiden La., N. Y.

Marshall Lefferts
96 Beckman + 495 Cherry St.
N. Y.

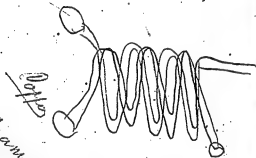
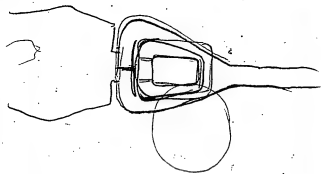
Brinckerhoff, Turner + Co.
109 Duane St., N. Y.

William P. Atkinson
97 Pearl + 108 Morton St.
N. Y.

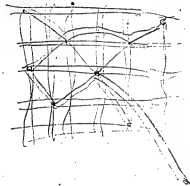
Am. Graphite Co.
24 Cliff St., N. Y.

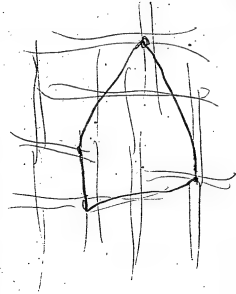
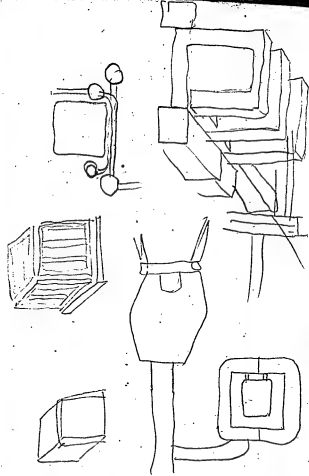
A. Goebel + Co.
129 Maiden La., N. Y.

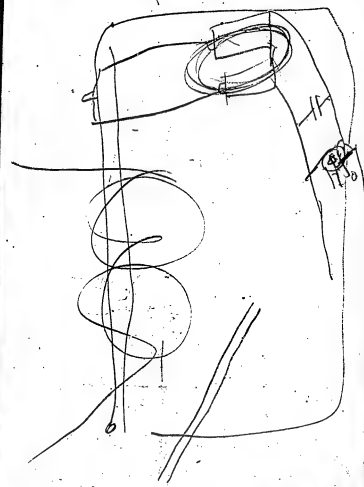
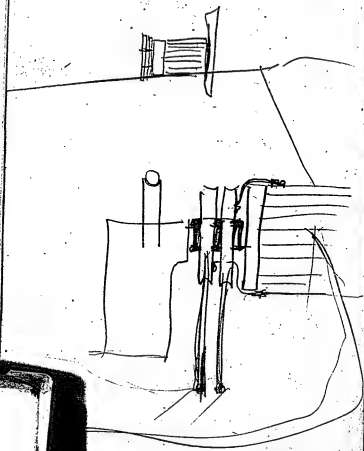
John Biddle
207 Centre St., N. Y.

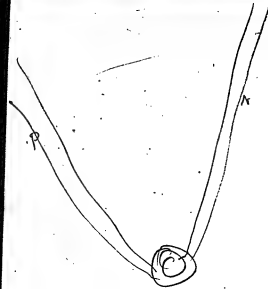
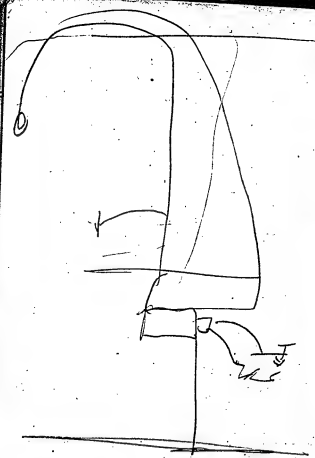


In anemometric induction
 apparatus for measuring
 the tension of the electric
 current the reversed
 the resistance of the
 material the primary or
 secondary









Philip Schmidt
✓ 41 Greene St., N. Y.

Johnston Bros.
✓ 1260 B'way, N. Y.

Samuel S. White
767, 769 and 1300 B'way, N. Y.

John Backus
✓ 46 Cherry St., N. Y.

Crampton Bros.
✓ 6 Rutgers Pl., N. Y.

R. Hoe & Co.
✓ 504 Grand St., N. Y.

Mineralized Rubber Co.
✓ 22 Platt St., N. Y.

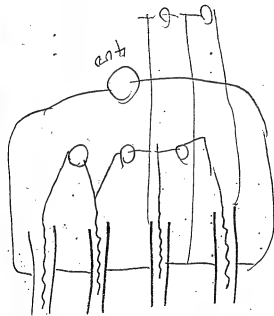
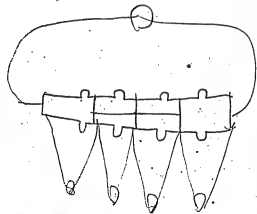
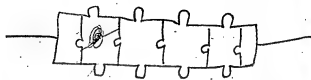
Edmonds & Benton
✓ 270 West St., N. Y.

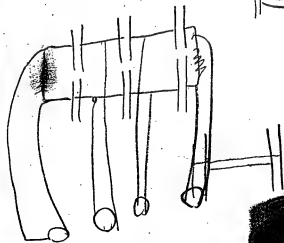
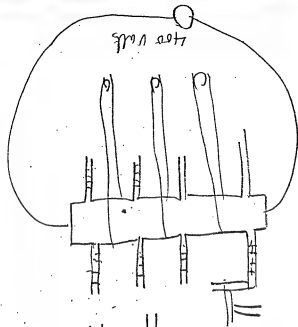
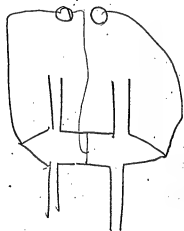
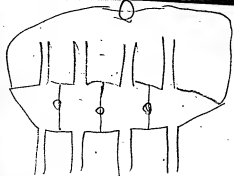
John Selous & Son
✓ 95 John St., N. Y.

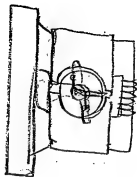
William Rupke's Sons
74 William St., N. Y.

Tyler and Finch
✓ 54 Cedar St., N. Y.

Cary & Morgan
✓ 234 N. 29th St. N. Y.







60 / 1500
 1200
 300
 23-

Bogart's Patents
 41 Knipow Sq. S. W. Co.
 17th St. N. Y.

Bennett Brothers
 91 Walker St., N. Y.

Boston & Sandwich Glass Co.
 21 Barclay + 26 Park Pl., N. Y.

Hagerty Bros. & Co.
 10 Platt St. N. Y.

D. F. Nieman & Co.
 16 Murray + 19 Park Pl.
 N. Y.

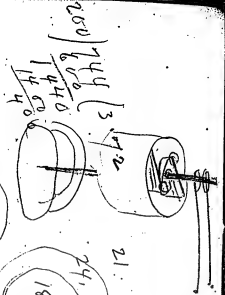
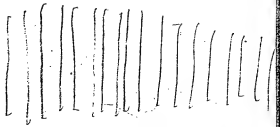
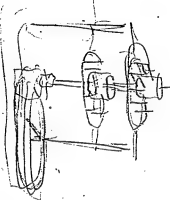
E. Steiger 23 Park Pl., N. Y.

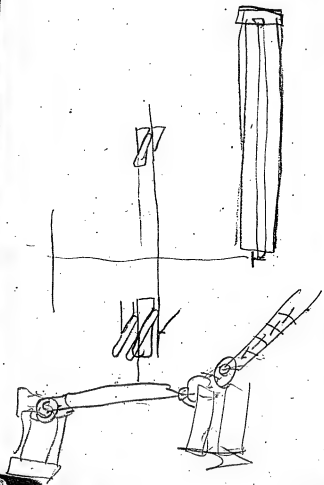
E. R. Durkee & Co.
 135 Water St., N. Y.

~~in Gillespie~~
 Louis C. Gillespie
 8 Fletcher St., N. Y.

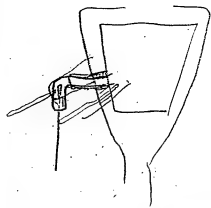
John S. Lamson & Bro.
 77 Maiden La., N. Y.

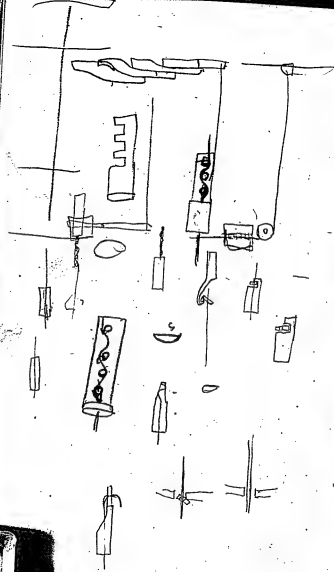
Louis A. Salomon
 216 Pearl St., N. Y.

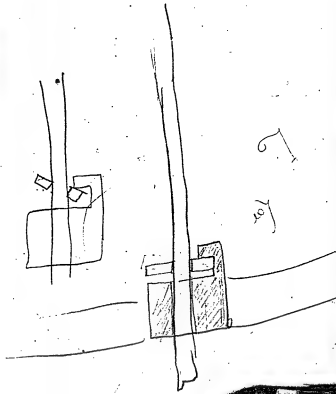
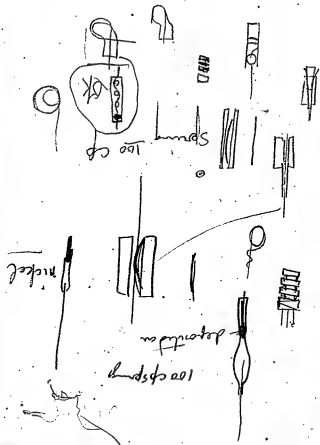


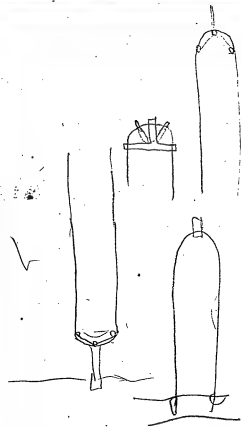
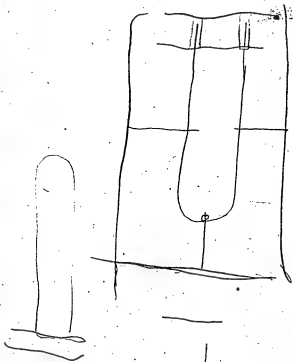


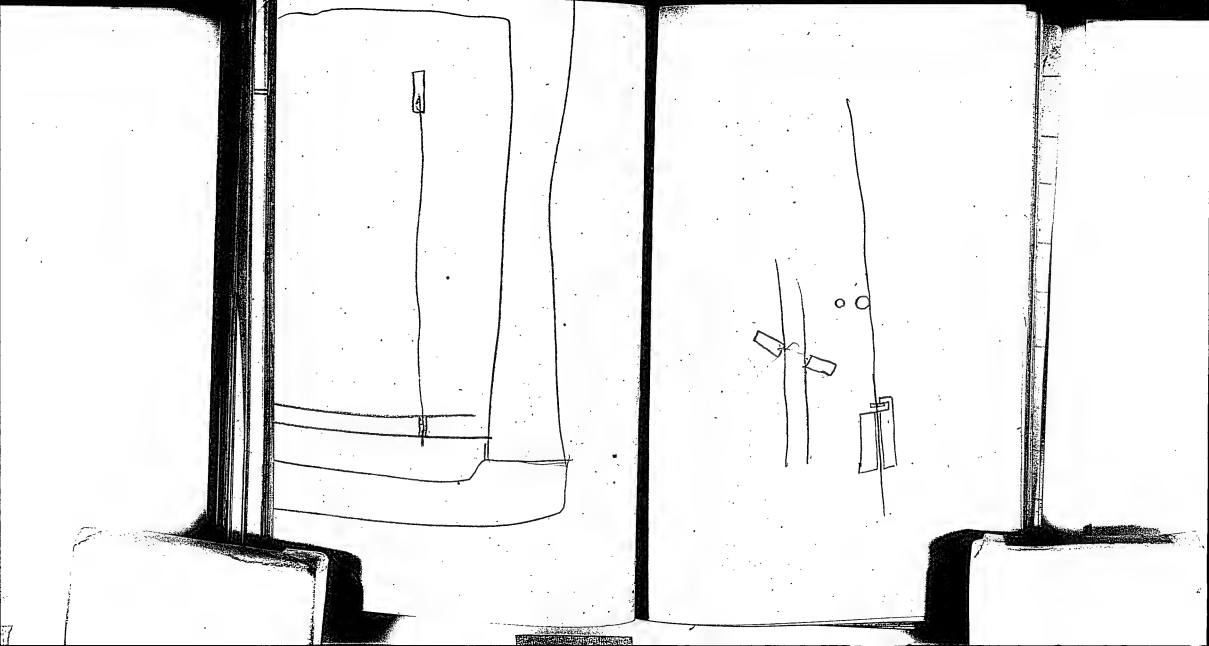
Chen

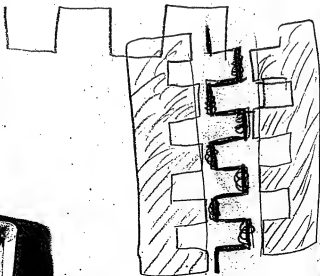




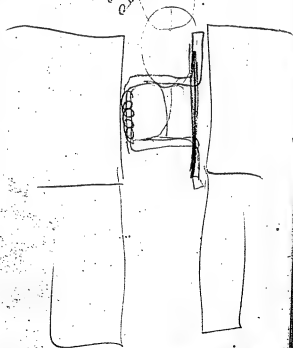








$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$
 $\frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$
 $\frac{1}{16} \times \frac{1}{16} = \frac{1}{256}$
 $\frac{1}{256} \times \frac{1}{256} = \frac{1}{65536}$
 $\frac{1}{65536} \times \frac{1}{65536} = \frac{1}{4294967296}$



$$\begin{array}{r} 20. \\ 5 \end{array}$$

$$\begin{array}{r} 8 \overline{) 5006} \\ \underline{62} \end{array}$$

$$25,$$

$$180,$$

$$\begin{array}{r} 2 \overline{) 740} \\ 16 \overline{) 370} \quad (23.4) \\ \underline{32} \\ 50 \\ \underline{48} \\ 20 \end{array}$$

$$\begin{array}{r} 8 \overline{) 23} \\ 15. \end{array}$$

$$\begin{array}{r} 25 \overline{) 7400} \quad (296) \\ \underline{50} \\ 240 \\ \underline{225} \\ 150 \\ \underline{150} \end{array}$$

$$\begin{array}{r} 296 \\ 370 \\ \underline{29} \\ 77. \end{array}$$

$$\begin{array}{r} 60 \overline{) 3000} \quad (50) \\ \underline{3000} \end{array}$$

$$50,$$

$$120.$$

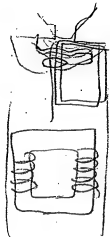
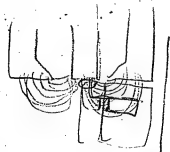
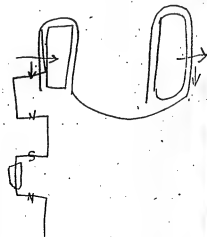
$$\begin{array}{r} 150 \\ 60 \\ \underline{9000} \end{array}$$

$$\begin{array}{r} 760 \\ 60 \\ \underline{600} \end{array}$$

$$\begin{array}{r} 16 \overline{) 250} \quad (15.6) \\ \underline{160} \\ 900. \end{array}$$

$$\begin{array}{r} 175 \\ 60 \\ \underline{10500} \end{array}$$

$$180,$$



75

1:

2000

100 000
120 000
50 000
25 000
22 000
315 000

150

350 000

180

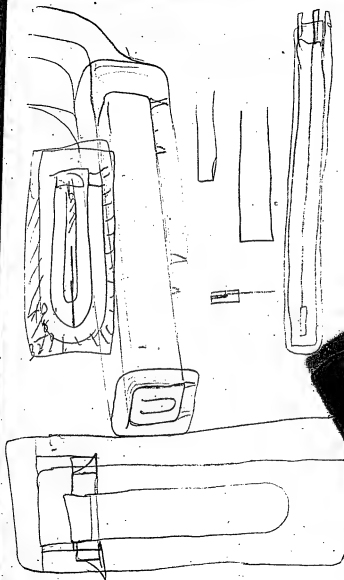
150

50

50

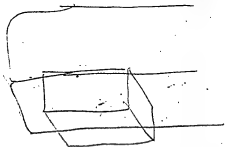
50

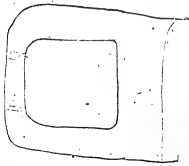
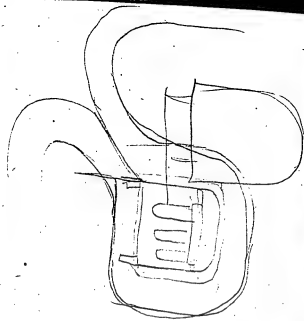
43



1000.

500 ft. 6.





Sarah Bishop
422 E. 25th St., N.Y.

Alexander King & Co.
84 Leonard, N.Y.

Benj. F. of 250 Water St., N.Y.

Pocasset Iron Works
9 Cliff St., N.Y.

William F. Wells
78 Beekman St., N.Y.

C. H. May, Firth & Co.
63 Pearl St., N.Y.

Brown Caloric Engine Co.
57 Lewis St., N.Y.

A. E. Roper & Herrill Co.
91 Washington St., N.Y.

E. Lyon & Co.
470 Grand St., N.Y.

Etienne Gillet
10 Courtlandt St., N.Y.

Composite Iron Works Co.
133 Mercer St., N. Y.

Otto Gerdaus
41 Dey St., N. Y.

H. Grote & Co.
114 E. 14th St. N. Y.

R. Isaacs & Brothers
621 Broadway, N. Y.

Millard F. Barden
60 Ann St. N. Y.

Joseph A. Binney
20 Courtlandt St. N. Y.

Carbow Black Co.
42 John St., N. Y.

H. Kohnstamm & Co.
126 Chambers St., N. Y.

John L. Caldwell
61 Beekman St. N. Y.

Colwell Lead Co.
28 Centre, 524 Pearl,
1416 Broadway, N. Y.

5300
56
31800

6
145000
8
1160000

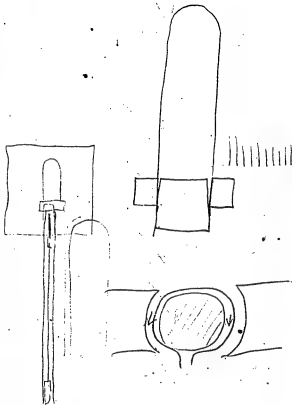
57
0000

53000
16000
12000
6000
3000
50000
10000
150000

500
900
3

530000
300000
500000
200000
80000
50000
1660000

30000
16000
10000
6000
11600
73000
3000
76000



N. Y. Smelting & Refining Co.
 ✓ 151 Jane St. N. Y.

Nathan & Bros.
 82 Beekman + 135 N. 30th
 New York

Anton Heim
 33 Ferry + r 225 E. 36th St.
 N. Y.

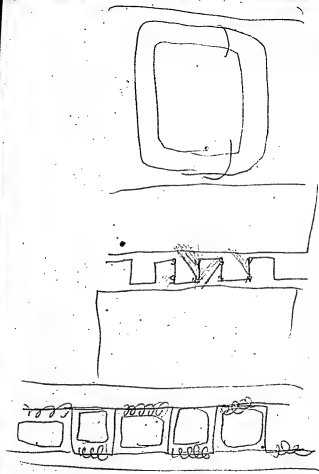
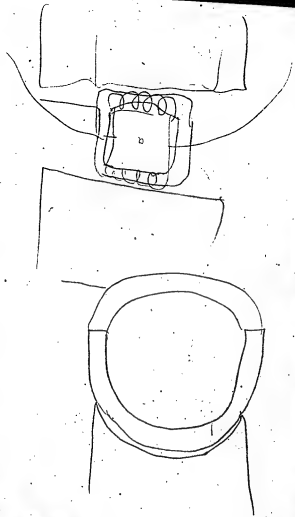
J. B. Hoyt & Co.
 28 Spruce, 212 Eldridge +
 Ft. E. 44th St. N. Y.

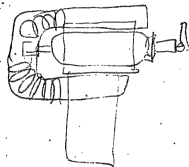
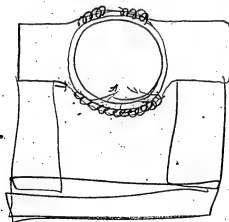
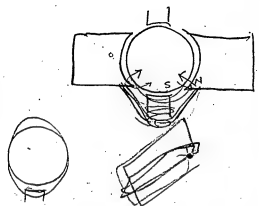
Reuben Smith
 ✓ 4 Fourth Ave., N. Y.

Am. Linoleum Mfg. Co.
 Rpt. Richmond, S. I.
 Agents: Joseph Wild & Co.
 90 + 92 Thomas St. N. Y.

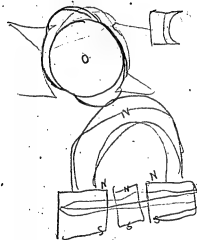
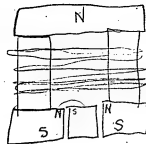
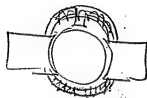
Victor E. Manger + Pertie
 110 Reade St. N. Y.

Henry Gaspar
 193 William St. N. Y.





100 V 201





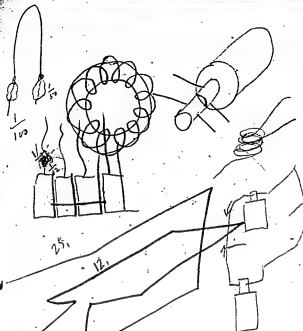
$$\begin{array}{r} 4400 \\ 50 \\ \hline 220000 \end{array}$$

1.4
1.7
35

$\frac{1}{200}$ 2 $\frac{1}{100}$

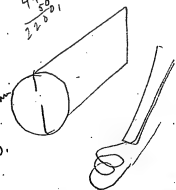
$\frac{1}{100}$ 50

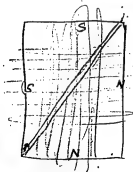
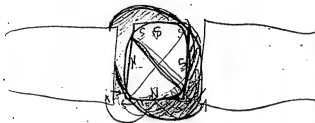
$\frac{1}{5000}$



$$\begin{array}{r} 440 \\ 50 \\ \hline 22000 \end{array}$$

1 amp 1 ohm
50.





Mayers, Merrill, & Ottmann
✓ 23 Warren St. N. Y.

Stephen R. Krom
✓ 21 Liberty St. N. Y.

Alexander Maxwell
✓ 176 Broadway Fourth Ave. n. 138th St.
N. Y.

Oscar G. Alstrom
✓ 162 Williams St., N. Y.

John J. Barry
✓ 90 Fulton St. N. Y.

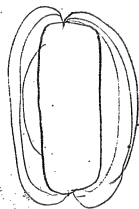
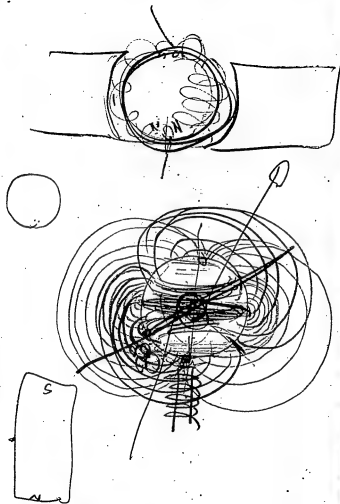
Adolph Bayer
✓ 63 Fulton St. N. Y.

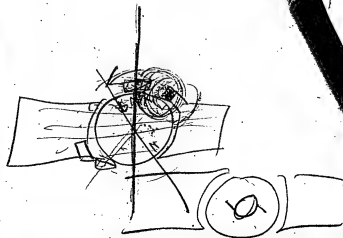
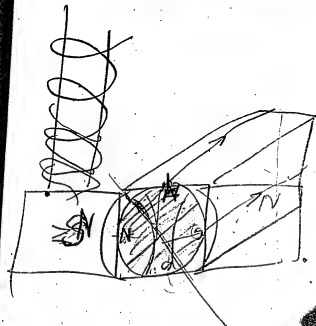
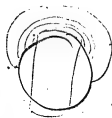
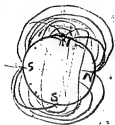
Beck Brothers
✓ 50 Fulton St., N. Y.

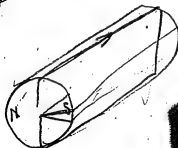
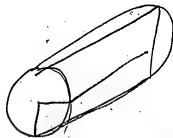
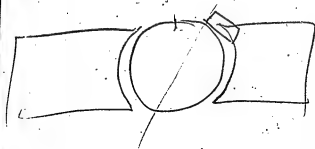
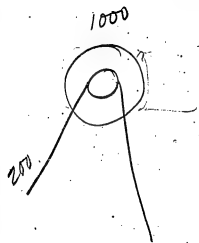
D. Ed Eggert's Sons
✓ 74 Wall St. N. Y.

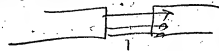
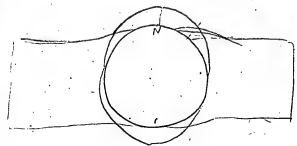
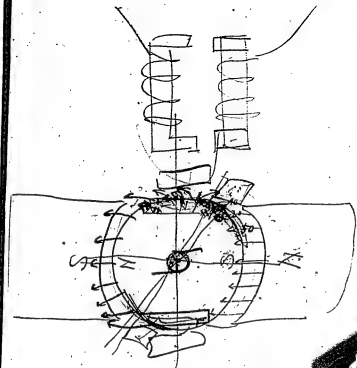
Hugh M. Hunter
✓ 1132 B'way. N. Y.

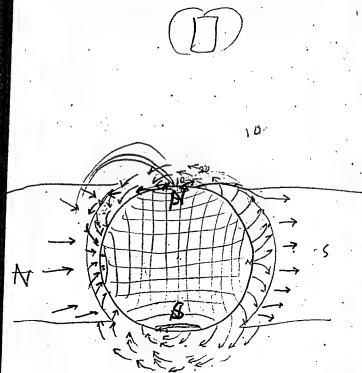
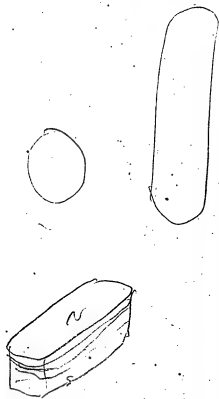
Frank Kroschel
✓ 52 Nassau St., N. Y.

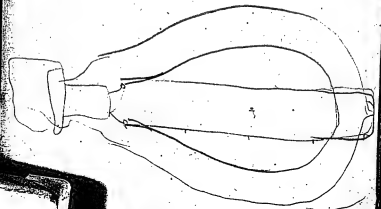
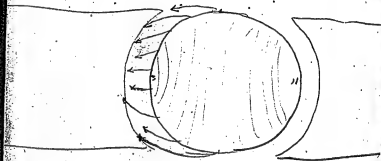












U. G. Physical & Optical Co.
271 St. Jones St. N. Y.

Stackpole & Bros.
44 Fulton St. N. Y.

F. W. Wagner & Son
43 Maiden La. N. Y.

Alexander D. Elbers
26 1/2 Broadway N. Y.

John Pettit & Bros.
240 Pearl St., N. Y.

W. O. Dancy & Sons ^{N. Y.}
57 South + 115 Wall St.

John H. Pearce
45 Lispenard, N. Y.

Boyd & Chase, ^{N. Y.}
E. 107 St. c. First Ave

Bausch & Lomb Optical Co.
37 Maiden La. N. Y.

Hugh W. Hunter
1132 Broadway, N. Y.

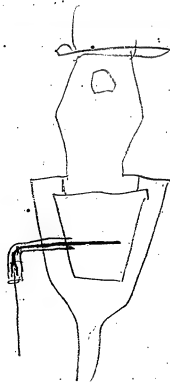
$$\begin{array}{r}
 108 \mid 14000 \mid 129 \\
 \underline{14000} \\
 14000 - \text{divisor} = \text{remainder}
 \end{array}$$

$$\begin{array}{r}
 108 \mid 14000 \mid 129 \\
 \underline{14000} \\
 14000 - \text{divisor} = \text{remainder}
 \end{array}$$

$$\begin{array}{r}
 108 \mid 130 \mid 129 \\
 \underline{1080} \\
 1300 - 1080 = 220 \\
 220 \mid 108 \mid 129 \\
 \underline{216} \\
 220 - 216 = 4 \\
 4 \mid 108 \mid 129 \\
 \underline{432} \\
 432 - 432 = 0
 \end{array}$$

$$\begin{array}{r}
 108 \mid 130 \mid 129 \\
 \underline{1080} \\
 1300 - 1080 = 220 \\
 220 \mid 108 \mid 129 \\
 \underline{216} \\
 220 - 216 = 4 \\
 4 \mid 108 \mid 129 \\
 \underline{432} \\
 432 - 432 = 0
 \end{array}$$

$$\begin{array}{r}
 108 \mid 130 \mid 129 \\
 \underline{1080} \\
 1300 - 1080 = 220 \\
 220 \mid 108 \mid 129 \\
 \underline{216} \\
 220 - 216 = 4 \\
 4 \mid 108 \mid 129 \\
 \underline{432} \\
 432 - 432 = 0
 \end{array}$$



Fairbanks & Co
311 Broadway. N. Y.

Scales House
325 Broadway. N. Y.

Wesley Cooke
411 Eighth St. N. Y.

Jonathan Ward
155 Maiden La., N. Y.

Bradley & Carrier
54 Dey St. N. Y.

Penshyn Slate Co.
50 Union Sq. c. 4th an +
E. 17th St. N. Y.

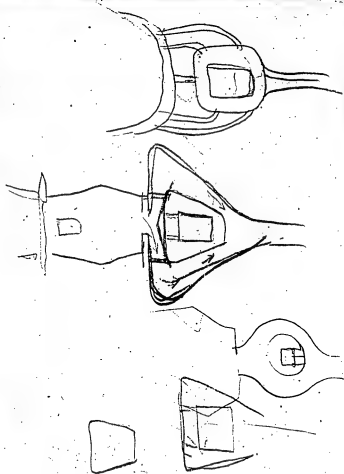
John F. Byrnes
22 1/2 Centre St. N. Y.

Steiner, Kahn & Co.
478 Broadway. N. Y.

Salanc & Grosjean Mfg. Co.
14 Cliff St. N. Y.

U. S. Stamping Co.
68 Beekman St. N. Y.

James S. Pratt 81 Fulton St. N. Y.



Am. Tool Co.
116 Chambers St., N. Y.

Douglass Mfg. Co.
43 Chambers St. N. Y.

Grasse & Co.
62 Chatham St., N. Y.

~~Interchangeable~~
Interchangeable Tool Co.
57 Hudson St. N. Y.

Michael Lukanitsch
351 Broome St. N. Y.

James T. Pratt & Co.
58 Fulton St. N. Y.

H. Prentiss & Co.
14 Dey St., N. Y.

Francis Knapp
171 Suffolk St. N. Y.

Samuel J. Albright
140 Centre St., N. Y.

Herp & Co.
117 Pine St. & 321 E. 22^d St. N. Y.

100

$$\begin{array}{r} 5 \\ 1908 \overline{) 212} \\ \underline{9} \end{array}$$

$$\begin{array}{r} 5 \\ 400 \overline{) 100} \\ \underline{8} \end{array}$$

$$\begin{array}{r} 100 \\ 9 \overline{) 300} \\ \underline{5} \end{array}$$

$$\begin{array}{r} 100 \\ 3 \overline{) 300} \\ \underline{6} \end{array}$$

$$\begin{array}{r} 75 \\ 400 \overline{) 30100} \end{array}$$

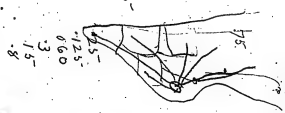
$$\begin{array}{r} 400 \\ 30000 \overline{) 75} \\ \underline{25000} \\ 25000 \end{array}$$

$$\begin{array}{r} 8 \\ 10000 \overline{) 80000} \end{array}$$

$$\begin{array}{r} 200 \\ 15 \\ 400 \\ 3750 \\ 800 \\ 1600 \end{array} \begin{array}{r} 1500 \\ 13750 \\ 1875 \\ 936 \\ 1800 \end{array} \begin{array}{r} 10000 \\ 10000 \\ 10000 \\ 10000 \\ 10000 \end{array}$$

$$\begin{array}{r} 1 \\ 2 \\ 4 \\ 8 \\ 16 \\ 31 \end{array}$$

$$\begin{array}{r} 250 \\ 125 \\ 625 \\ 3125 \\ 1000 \\ 2 \\ 4 \\ 8 \\ 16 \\ 32 \end{array}$$

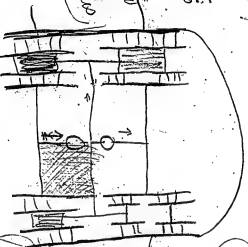


4003 grand fort Muenkard wa

125 p
72 28

31 000

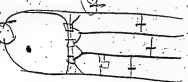
6 miles

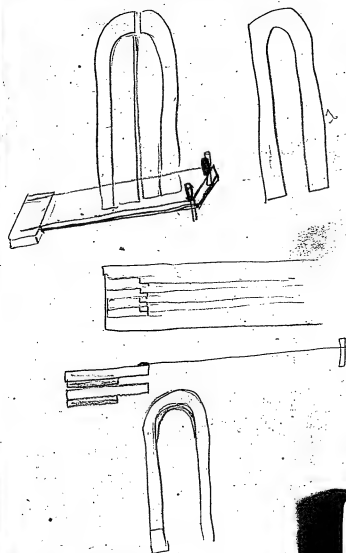
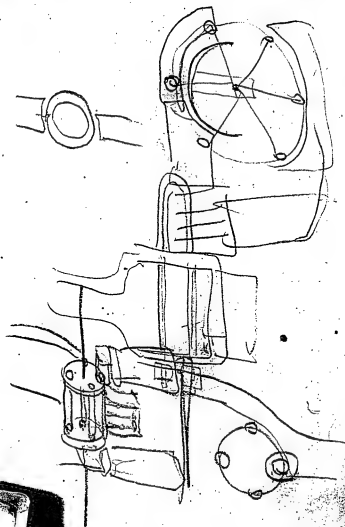


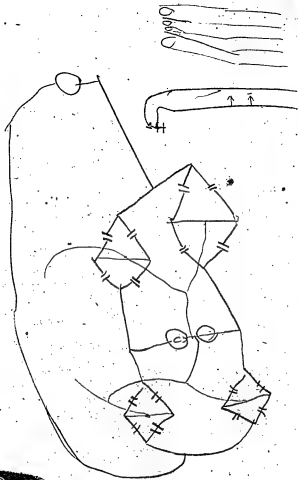
90
82

82 p
72 29

grand fort Muenkard wa







Albert Berger & Co.
47 Maiden La. N.Y.

Chas. Armshuimer
67 Nassau. N.Y.

Israel Farjeon
75 Nassau. N.Y.

Henry Ginnely
31 Maiden La. N.Y.

L. Hammel & Co.
9 Maiden La. N.Y.

Reichhelm & Koester
67 Nassau, N.Y.

Frederick Nagaw
82 Nassau, N.Y.

Henry Jimmyson
8 Maiden La. N.Y.

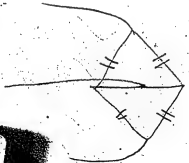
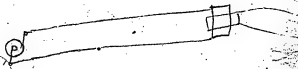
James M. Botsam
111 B'way, N.Y.

E. Imhausen
212 B'way, N.Y.

William Bruening
164 Allen St. N.Y.

Clinton Rice Club Co.
73 Fulton St. N.Y.

Passaic Fire Co.
113 Liberty St., N.Y.



374

POCKET NOTEBOOKS, 1878-1886

The pocket notebooks are a group of miscellaneous books, generally measuring about 3 to 4 inches in width and 6 to 7 inches in height. Included among the pocket notebooks is a set of six journals kept by Charles P. Mott between March 1880 and March 1881 to record daily activities at the Menlo Park Laboratory. The entries in these books were later transferred, sometimes in expanded form, to Menlo Park Notebooks #53 and #117. The other pocket notebooks are by Edison and Charles Batchelor. The entries relate to a wide variety of topics, including electric lighting, telephony, telegraphy, the phonograph, and hearing aids.

The books appear on the microfilm in the following order:

A. Mott Journals, 1880-1881

1. PN-80-04-09 (1880)
2. PN-80-05-03 (1880)
3. PN-80-06-08 (1880)
4. PN-80-07-14 (1880)
5. PN-80-09-23 (1880-1881)
6. PN-81-01-19 (1881)

B. Miscellaneous Pocket Notebooks, 1878-1886

1. PN-78-02-24 (1878-1879)
2. PN-82-04-01 (1882-1883)
3. PN-82-09-04 (1882)
4. PN-82-00-00.1 (1882)
5. PN-84-02-25 (1884)
6. PN-86-03-04 (1886)
7. PN-80-00-01 (undated)
8. PN-86-00-00.3 (undated)

Mott Journal #1 [PN-80-04-09]

This is the first of six pocket notebooks used by Charles P. Mott, a member of the office staff at Menlo Park, to record daily activities at the laboratory. The entries from these notebooks were used as the basis for more extensive entries recorded by Mott in Menlo Park Notebooks #53 and #117. This pocket notebook, which covers the period April-May 1880, begins about one month after Mott's first Menlo Park notebook. The front cover is labeled "150" and is inscribed "Notes taken by the way" and "1st." The back cover is inscribed "1880." The book contains approximately 40 unnumbered pages.

April 9.

All energy bent upon roads and
other apparatus for reducing it to
paper dimensions.

Mr. Heering finished diagrams of
hook and staple for Electric Iron
road.

Went calculating size of wire
necessary for running about 50
feet to the lamps. See Note Book
No. 66. 64.65 & 70

Some have collected evidence on
interference cases.

Basic experiments on collecting ground
and finding from ^{works} in the field at
2.50. 0000 P.M. Book No. 82 pg 109

Hammer & Lawton experimenting on
electrifying Mercury, got best result with
sulfuric acid & Ferrous chloride
of iron.

Blue gravel, Dry creek tunnel, Hill side
gravel, Dry creek tunnel, Davis gravel
Thompson Hall, Chamberlain gravel
Dry creek tailings
Bottom dry creek tunnel, Put-in

Rocking up on Mt. Hols No 68 page 7.

x Rocking in vacuum Book No. 57 page 14c.

Models for different forms of Carbons Book 57 pages 19 &c

x Models for carbonizing under pressure Book 57 pages 23 &c

x Leaded Loops Book 57 page 27 &c

x Maps for showing loop power vris Book 57 page 31 &c

x Models experimented on for loops Book 57 page 35 &c

x Styles of Loops Book 57 pages 41 &c

x Three disc armature book No 56 pg 211 &c

x Carbonization Book No. 57. 68. 70

x Lamp screens " " 73, 74, 75, 78, 84.

x " pump " " " 19.

x Plantation lists, apparatus & Revisation

x Book No. 63 (Lithographs)

x Dynamo Mds. No. 63. 8. 77, 82

x Glass House No. 68

Geometric work 82

x For test on Manpower in R. 82 pg 83 &c

x Conductors for Power " " 103 &c

x Data & Estimates on Exp of house

x Power, conductors &c. Book 59

x Miter Exp. Lenses Book No 25

x Tables & Loop dimensions 66

x Carbonizing Moulds & devices 67

x Chemical Lithographs No. 80, 86, 64

x Commutators " 80. Pro 8. 80

x Clamps 70.

x Chas & Allaps 40.

x Thermo - 21.

x Carbonization by Lamin 82

x Reactions 32

x Chemical Exp. 32

x Lanthanides 27

x Specials & Plumes 85

Regulation & Dynamics 79

April 10-

Markings

* Reeling heating furnace of soap
plate driven by motor & motor.



* B. Barker repairing copper conducting
strips for joints of rails of Elec
Tramway

Work on being finished by Andrew

* Dean making bits for stripping
sawd. and applying paper
down to machine for their paper

* Three models of hard leather
carbonized for A.M. Smith &
Holly pressing out most perfectly.
See Note Book 57, page 102.

* Dr. ^{150 to 150} Wilson trying the new pump
sprinkle drop but does not
find it gives as good result
as desired.

* Reeling tramway went along
as fast as possible
Mr. Baithorn leaving machine to bend
and shape wood proper

April 11

Electric Tramway, reaching work on road to-
day. The crew gang of R.R. men were
laying the rails on all line and on
the road today.

Wrote letter Holly - post paid
Lamp about 5:30 P.M. Set up
at 10:00 AM one bottle in glass
before being taken from pump.

April 12

Mr. Mason had fabricated glass
tube made for bypassing the face
of the furnace when going in on
the reservoir and is testing the
pump.

Dean getting up his track out
of road loops in regular shape
so as to drive bending them.

The first estimate with new basis
of hidden powder and put in this
A. H. 1-3-11 x

Mr. Fenn & Hammer making
decreases, staining and bending
at same time.

Dean, I was able that in morning
in drive
in morning in morning

Resisting Mrs. W. H. today making
Kala... list of generators 92.127

Garson and Holzer operated on 13
Lamps with their persons for giving
them a given glass appearance
and brought them out beautifully
Holly Lamp on pump yet to night
X giving off considerable air every

time it is heated up

Fine and Kinney using New York and
Albion as is to night and get

The first piece with name Edison
light Co. New York photo in signature
at first 12 others last night

Wholesale finishes and delivered into
glass house

April 13

Print glass horse making done
for per order by Mr. Upton Burt
No. 63 page 98

Phillips Cannon experimenting on
+ giving findings

Dean finished and is working the
+ attachment to lathe for cutting
wood. Croft Burt 51 pg 55

Calvin made last double carefully
+ made No. 63 - 82 pg 161

Long experiment last made as general
+ as motor in Laboratory get too
have power Burt 59 65 100 ft. 1/2

Charles makes out 63 L. 100
+ paper conducts necessary to
+ supply the lamps proposed to be
put out on parts - No. 63 pg 54
+ 27.400 feet
+ Helgeir trying finding new length

And some satisfied with it
+ ad. m.

Commenced. I found to day in book
No. 80 the notes of the experiment on
changing angle of commutator curves
date Feb. 8, 1880 page 99 Burt 80

Crab and Hippie to day used for
+ separating sand, one magnet above
the other and got much better result

April 14

Went to lamp house glass some
+ Flare 2216 this A.M.

+ Taking testimony in interview can
Shank & Egan

The new natural body made by me
+ Wright Machine started to be altered
to have 7000 revolutions

Reaching 1000 in revolutions to supply
+ the steam ship of C. S. Nav. Co.

295-269-277 Reaching with the new
+ mechanism New Machine as noted
845-476-445. Design 22 April 759
82-179

One machine 148 revolutions after armature
opened. 243 12, field off armature.
+ 141 field on brush off. Machine 227
plate 336 Rev. field off. Brush and
armature on. 295 Field & brush on.
277 & 269 Field & brush on.
New Machine this A.M.

+ Field went from reversing Rev. 845-
after bringing up field on 476 & 445-2
Field & armature off 759

Pump of Mr. Moore took down by phone
+ pump and changed it to regular
spring, adding an arm trap
and testing tube

April 15

+ Hydraulic pump delivered 11:15 A.M.

+ Testing with motor and electric dynamometer the current of the main line in laboratory. At 12:16 by

+ Result of wire generator on motor with electric dynamometer. Both 58.75
P.S. by 185.

+ Both making pump smooth. Both 68
page 25.

+ Continuing in shop + Edison shop
continued to day

+ Grady + Kipples experimenting in sand separation by use of sieves as many as five placed one on the other having been tried first two No. 40s to give an idea of what has been obtained. Now through the proper mesh in one we have in a minute and a half separated the sand nicely.

Now sand brass form finished and in use by Van Liew made order at Spring Creek.

+ Mrs. Butcher skates around and around. Dean to make new machine for cutting. Both 57.50 75.

+ Mr. Edison suggests blanks to figure the resistance of the wire. Bullets taking the case of dynamometer as ~~starting~~ foundation. Both 10. Also making corrections in report of Hydrographic Survey.

+ J. Hopwood large globe for school. Canvas secured to day.

+ Monday of National Corps carting.

+ Second generator for Columbia put together and running.

April 16

A lot of Moulds (cont.) of heat
 traps taken out of Moulds this A.M.
 + Bork No. 27 by 115. cut partly only.
 Also 20 paper cartons from each place.
 cut in two halves.

Also taking paper drawing from E. of
 King's Hill for building and most at
 work on building building.

Alt. stilling new chart in section.
 and building up. stilling person.

Miss Edison sketches and records
 of the and going to make sure
 that to be true in connection with
 magnets in section of same.

Also let Upton & son in getting up
 section and and condensation.
 + Black seems to be used in connection
 with pump experiments. ~~the pump~~
 by them.

Review. Over. After lit. at least on
 floor apparatus to measure the magnets
 and further to contain the more
 work of car of the battery. Skillet.
 Bork No 50 pages 156 & 2.

Armature of 254 disc that now has
 in and for some time to - always
 jumping more or less near bottom of
 by electromagnet and going in and out
 of balance and in position
 quite over by the extra section
 produced by that eye.

Scan of new in arm and how abraded
 attachment for coils to guide in cutting
 Kloppe, to be true in sample and with
 magnet of Mr. Edison Bork No. 27 by 71 & 2.

Western Dynamic machine boxed and
 shipped to A. Bergmann.
 (Quartz Tackings Spring valley) ~~arrived~~
 to by G. & D.

Martin Free planning hilly down
X 15 or in line to be on in shape
in said road former.

Having tried the electric gizzard
at 280 rotations it just came
back to its former and former
through the air line and at
268 rotations very rapidly

Sharp experiments, these confirmed
all suppositions made and a
very nice and fine white experiment

April 17

Columbica Two Paradies machines
x Nos. 10 & 12 Shipped to San Diego
from warehouse of 9th St. N.Y.

2. Letter between old off. and General
1. Letter on this in room.

Upton listed ~~afternoon~~ ^{afternoon} page 82 page
After seeing 2 battery cells for
^{your} Danger ^{of} falling ^{over} 25 feet
Xposed of face, Book 82 pgs. 201
Ana photometer test of wooden back
Lamp No. 1029 BHO 82 pgs. 204 &c.

Have provided the theoretical
practical assistance of both
guides and is doing means
to test the accuracy of his calculations.
Born Nov 72 page 684c. Total
practical assistance 2039/10

Two gentlemen said to be reporting
funerals here and in charge of
the station.

Review direct for training desired

April 18

and which given 15. Alt. from which
the completed the same pattern for
caddis

Then Silver succeeded in cutting from
the wood worked by Eric. a regular
herringbone according to new pattern

Yip: into sample for
Main burner cutting the mirror of
the suitable glass.

Francis believes he has discovered
the true vacuum pump.

Eric tomorrow. Three more grading
and straightening brads, three lagging
the a. Whirling and three at twisting
and other work connected.

Pumps. Bruce finished and strong about
the 60. With is increasing two of the
pumps with same brand trip, is up

Grading & lathings slowly crushing some
kind preparing it for in Edison
Dr Hyde

Pump after Francis' designs made
about better by now before trial tried
and in evening got into pump machine bag
up in shape in about 1/2 hour. It is up
ready. Mr Andrews making new
style pattern after sketch by
Francis. Book 80 page 1764c
designed for Columbia

Stable condensing the report of the
Annual Meeting.

April 19

Wood Lops Van Cleve cutting machine
Lops from 12 wood mules down by
+ Bears, putting three in frame together,
get one lot of them in good shape

See date April 12.

Plot of post Revere's transverse slope mts
+ Farad's Notes 56 pgs 205

George put me wood lops lamp on the
+ skinned in dark room by one head a
up in the center line.

Meaning regulations and getting ready
for shipping ⁴ the lamps for examination
into 125/1670

Begin in preparing for practical machine
work motor

St. Mear got good vacuum at his
+ Sprinkle in two lamps in 5 hours

John Bachin making new pump for
+ in the sketch on Book No 13 page 39

One & Laining Mr. C. C. St. Mear, across
to bridge, engineering and testing one
+ Laining a large lot of which have
nearly been received.

Journal No 13 finished and dated
1900

Wood muling. Mr. Balthus making
+ a complete sketch of machine for
muling wood lops.

Slide made for going during
+ sketching for Mr. Stigler a device in
which to show in color lamp glides

Photo test C. Lamp No 22, 209
pages 712 Cpg 12 and 13 + another 23
also from 23 Cpg 12

Machine No 14. Skilled muling
+ got gave me engine's certificate
+ taken one of Cunningham and some
to have had cross.

+ More on Hydraulic Press

April 20

Gampa, Columbia. Mr. Hylton
sent to Mr. Cook New A.M.
carrying with him some things
for Columbia

Station. The blowing of the steam
generator was at Station No. 18 for
the time. After drawing more sails

Blowing in the engine of generator
having in all 100 by Bradley

to make good 250 lb of mercury
to produce pump vacuum.

Thin glass bulb for inner tube by Hylton

Gas coupling. At making plates
for castings for car couplings

Quilting. Can you make
for cutting wood blocks made
and metal made by Mr. Edison
date today. Each copy a piece

Height of Ammonia & boiling 212 lbs

Air Blast. At request of Mr. E. Hylton
and crew, representing water and
with hydraulic air blast

Paradise Machine 13714 shipped for
Steamer Orinoco

Find sheet by Mr. E. of separating
blast for experiment of same separating
apparatus for getting air out of carbon
pieces of wood, paper and iron cutting
the to make, and apparatus which
I hope to be an arc lamp with
electric engine attachment for rotating
the carbon. Lithium. I dated on
of today and signed & witnessed all
on one sheet

Notes were sent from Mr. Danville
in balance room to Glass Room then
to Engine Room then back to Squire's
room then to balance room, through
from Baltimore one at each place
by Lawrence & S.D. Mott

April 21

Sketch for armature core for motor
15 to 21 inches depending on material.
The shape from form previously made
is on page 79 page 233

Test of opaque lamp gave from 9 1/2 to
Kedge 5 1/2 to 5 17 to 9 1/2 page
56 to of face. Best 52 page 215

Sketches of design for enclosure
to two lamp lamps.

Notes on Lamps some dismounted
by some eating off in various places
from plate in at surface
of lignite

Pump with single tube answering for
blow-off and gauge working by Bohn.
Boyle 55 page 115

Notes taken out by Van der Horst
from page 124, 125 & 195. these notes

Sketch of Mr. Wilson's experiment
for gas valve for safety valve to
be used on Columbia

Lamp for machine between and from at
note on

Sketch of design for lamp in place to
filled with oil or steam & engine and
working in result of quick motion
engine

Mr. B. states as a fact that the lamp
will not burn but on the contrary will
be longish fire

Having made sketch of machine with
motor

April 22

Small dynamo. Its making patterns for
gaslights of small dynamo. Approx 2418
Lamada to be 3/4. Tests made by Mr
Munn. asked 21 April.

Electric locomotive. Breaks making Pat.
X Fire drawing

Mr. W. K. Kinsler in Laboratory, seeming as
X under to test the journal heating. found to
heat to cause an action in the journals

Thin glass and a platinum medium wires
10 tubes sealed in on 20th by Mr. Higgins
X from examination to day by Hamner and
found to be entirely free of cracks

Condenser broken, receiving a burst in the
tank

Jump. Dr. Hines experimenting on weight lifting
X pump made by Bohn yesterday

+ Safety catch. by Smith.

X Lamp of Fatina wire made for experiment
X for Dr. Hines. Fire vacuum on 5000
X Vacuum gave about 45 candles after
vacuum gave. tested by Mr. E.

X Shipped several boxes of telephones

Found separate starters by Mr. E. and
Kewell. direct to have apparatus made

High speed. Mr. Teller, manufacturing
X of high speed engine from Newark, N. J.
due this evening

Black's test run by Gately power in road
X low strength of furnace. no stars in Laboratory
and some experiments made with them and
lost with very poor results

Dynamometer reduced pressure of steam
X on engine to 10 lbs and gave it 1000
X full length of stroke to see if the dynamo
would be any. steady. but had no effect

April 23

Hill & Cunningham gone to N.Y.
He put up bedrock.

Black Glass taken up experiment as
black for sand separation.

X-band in three measuring seat lat.

Apparatus with three wheels arranged
for plants to rotate to shed leaves.
made for running on a circular.

Telephone receiver. On device at work in
precious to make it all tight to resist
atmospheric influence.

Dynamo run from by Mr. House. Both
to page 67. Magnets on absolute lines.

Pump double tube on within the other
arranged for lamp. Both bottom.
Sketch Both 68. page 51. the single
tube pump sketch page 53.

Flamingo station. Having designed and
made sketches of dynamo station, especially
adapted to control movements of trains
of electric trolley also sketch of
arranging machine for glass. Heron.

April 24

Pluton & Birmingham again in New York.

Spent by Francis again up and at new
wrote lamp on, vacuum in

Animal. large tank in which to read.
These notes remain to day.

Columbia, learn from the new at
grove in Columbia that the of the
generator was at running tonight.

Bills put in form of appearance present
and new for article

Q.



April 26

Columbia, New York, Edison, Grace and
Birmingham in New York today.
Testing lamp 80. by the light spot
at which glass was seen. small glass
provides for the indication of one
of them was injured and it
brought back for overhauling. also
quite a number of lamps of both
columns. high & low resistance
passed back.

Mr. Edison ^{and} Mr. Newell probably
have full amount of apparatus
made with Mr. Porter on 22nd.

Lamp, both started lamp in glass house
got lamp vacuum in my shot here.

Freezing device by Harry working by
Anan

April 27

Bus from High Mountain Lodge sent
by the British bus service & listed

Blindfolded *Leander* magpie with two
trays of 500 lbs.

Electric leading from the shore of
and the first detached scale pipes
X-ray is forcing water back through
them carrying with it quantities of
dirt and mud.

Hydraulic *Leander* the first of the
series.

Blowing mercury for the first time
from the working mercury pump
by a valve in the pump air through
the mercury which is under water.

Pump of Hydraulics first working by
power of electric motor and force
Hydraulic ^{pressure} stage up to 1500 ft.
high as desired and necessary.

Reception on board Columbia Mrs. P.
and evening and those who were
given tickets have gone down from
now.

Under Mr. Wilbur, *Leander* *Leander*
Holzer *Leander* *Leander* *Leander*
Roger Mr. *Leander* *Leander*

Pump *Leander* *Leander* good pump
vacuum in six minutes

Amputation first by Lewis *Leander*
ground today, one which had
lain some time had to have
a little overhauled in consequence
of sharpening of *Leander* *Leander*

April 28. 80

Work for condenser to Little Lamp.
Commenced tapping down

Geometric magnetometer with 249
wire charged and by allowing the
force of ion such as used on top
X generator to come in contact with
the poles. Having calculated the force
required to force by p.p. one inch from
from magnet to be 6400 pounds.

Hydraulic motor driven pump against
150 lb hydraulic pressure 900 ft. and
pump pressure from 509 to 600 lb. with 10 ft.
to 2 ft. - 100 ft. 1 x 3 in 29 ft. pressure
5 ft. 2 ft. low pressure

Laurence Mr. Blake having made a
X calorimeter to measuring the energy
lost in luminous journals

Lamp hanging down of three pieces
X lamps down to night and made
by Alt

Pump Granum claims to have had
lamp ready, ready in about an hour
to seal off

Autographing, late last night. P. 12
X 12 ft. 12 ft. 12 ft. 12 ft. 12 ft.
X Corrosive and has one of about
175 ft. through which magnet
900 ft. 12 ft. 12 ft. 12 ft. 12 ft.

April 29

Quick Francis pump removed 12 to 13
X lbs of Mercury per Minute from no.

Wood broke out and carting by Van F.
Keweenaw in lamp. Temperature today 19 to 25.

Condenser broken. Ayrer took out and
dressing condenser from pump. Dashed.

Setup double pump set up by Miller.
Y. Hammer obtained vac. in 11. Packed on
Keweenaw in 5 hrs. showing much
better proportion than with the

Cleaning Mercury. S. Man sat more
pipe vacuum to large bottle to receive
condenser for cleaning mercury.

Wood Milling. Bartolon and Dean
made new cases for wood miller
and take them good results.

Atmospheric vacuum. Hammer has been
several days burning a lamp of mud.

Lower vacuum than usually obtained.
Y. took the relative value of very high
vacuum.

April 30-

White City Lamp exhausted on ground
X in dark room

Mr. Dymally. John G. M. making pattern
for casting to do. depress. small
X for piece where for machine on wood.
Rough sketch of machine making
patterns for right & left brush rollers.

() machine being put down X

Tramway rails arrived as far as the
X three mile permit

Model for lamp holder finished. as shown
X see. work well

Final board for Columbia making
X by Linders.

Several styles of design for relieving
X lamps of sudden jolt being tried

X indicating blank practicing. Into here,

May 1.

Cymatic repair and shipped to the
X California

Mr. Clamper Mr. Bolster done &
X finished. New form of clamp and roller
for rolling wires for clamps. B. S. 7. 11. 19. 19. 19.

Condenser to lamp up. R. B. 6. 11. 19. 19. 19.
X each of No 10 wire being run

M. L. G. commencing line of experiments
to ascertain whether or not the rolling of
X copper plate does not injure the surface
of copper causing unequal abrasion thereon

Calorimeter to test energy in form of
X Boole. 7. 2. 14. 14. 14.

Yug board & wheel for making and
X making connection to recording mag.
in magnets going being made. Motion to ground

X cleaning boiler hood blowing out boiler
and cleaning same

Experimental Note of carbonization of
Bread, page 102 of Note Book No. 52
dated October 22, 1979, 9 a.m.

Exp. Mtn on changing angle of distance
later between Feb. 8. 80. P. 216 80 pp 99.

Costs of Revisions & Transmittal	Br 156 p 111
" " Foreign Mchrs.	" 57 p 200

Mott Journal #2 [PN-80-05-03]

This is the second of six pocket notebooks used by Charles P. Mott, a member of the office staff at Menlo Park, to record daily activities at the laboratory. The entries from these notebooks were used as the basis for more extensive entries recorded by Mott in Menlo Park Notebooks #53 and #117. This pocket notebook covers the period May-June 1880. The front cover is labeled "151" and is inscribed "2nd" and "1880." The book contains approximately 40 unnumbered pages.

May 3

Experiment to determine whether loose
action may not cause separation of a
X mixture of amalgam, putting copper
pieces on top, dipping mercury covered with
sublimic acid, mercury can be brought

Pump John A. taking careful measurements
and making diagrams of one of the pumps
X from dash cars from which others
may be made of waste size etc.

Reed wood being worked on rolling mill

Calculated list of energy lost by friction
in formula of ammonia R.R. 7 pp 1118

Hammy car castings delivered

Rea factory being cleared preparatory to putting in
X pumps and lamp manufacturing apparatus

Wm. H. Forrester left for Birmingham
X to Columbia again to day

May 4.

Wood & Vanu Lamp 7 1/2 - 650 ohms - 1st
Kaneconical Bottle 6.3 am page 9

Garble Meters making of small meter for
Kite and Experiments by Hammer & Co.
on an in tank or pump off in good shape etc.

Pringle's preliminary work on barbe commences

Yp Bottom making 476 gauge machine at the
order of the Edison - West. Bottle No. 63 page 83

Instructional Columnar test continued by Glava

Old Spring making diagram of ^{Pringle} ~~Pringle~~
for Mercury to be used in old factory
in which they are pulling and flinging

Conductor South from H. A. A. 25 ohms
X to each line

Lead glass, Pelzer here with two samples
of lead glass tubing 175K globe with
which to make wooden mould

One Eng. Kene helped with paper & tin

Bulk Mould arranged on iron base and
with spring attachment for opening

Disaggregated Mercury Dr. Mann arrangement
X-ray with 15 gms. to experiment on its
ability to discharge itself

Size for sand experiment circular in glass
Kane of different size must finish by cutting

May 5.

Messrs. Amalgamated by Messrs. found

Find something to have purchased itself.
Amalgamated by Messrs. found

27 lamps. Hammer informs me now taken off

The printer yesterday by himself alone

Clamps of nickel, copper and platinum, tried in

Hammer. Lamp of light platinum clamp put
up to same heat by Mr. Brown but does not

expand as much from heat as it did

Xenon also shows and put previous to evening

Original balance transferred by Mr.

Hammer and in fact the one found

Hammer corrected by me Mr. Brown

900 is another value for the same

Be. No. 12 page 15996

Xenon now can find cutting instead of large

One from New Mexico very rich brought

X by gentleman from Silver City N.M.

Oliver Lawson experimenting on sending

glass globe ^{on surface} by electric force

X not find it so simple and direct and

contact, lower water and

Refracting magnets for same purpose

nothing for same matter by Oliver

Hammer notices that Xenon does

more work at point where dropping

X missing still the column, etc. in

view at that point that shows some fine

fine cracks and one larger one.

Thursday May 6

* Full moon, 1st moon, 2nd moon, 3rd moon

* Karg Lane 1st night meeting gang of

* same 2nd night for riding horse from

filled wood

* Leland, 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

Friday May 7-

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

* Leland 1st night 2nd night 3rd night

Saturday May 8.

Went and then casting for E.
 Xtra work received the E. the work
 put in case.

Went to the house and down to
 the work. Put 50 p. in the

Went to the work and put in the place
 the work - finished.

Went to the work and put in the place
 the work - finished.

Sunday May 9.

Went clearing water of engine
 place. And then clearing the
 place and turning the water.

Went to the house and put in the place
 the work - finished.

Wednesday, May 12

Mitt went to N.B. to see Rutter
about lumber for Mr. Balch and
get names of buyers of lot in B.C. Co.
R.

George White letter from Stamp. by
B.C. Co. on P.W. R. Co.

R.H. Victor raised off of floor and
saw like a top.

Ernest Volker copied picture of
Mitt in blue ink.

George Lave. And see on water mill.
Lave's wood mill. Lave's plan for mill.
Xylocopa. New on concrete on blue
engine.

Sold a mill by R.H. Co. Both 100 p. 50.
Saw a lot with a good mill for
power and saw grinding.
For construction of the power. R.H. Co.
by reduction to impalpable dust.
blow in inner gas flame. N. G. Co.

George Lave. And see on water mill.
Lave's wood mill. Lave's plan for mill.
Xylocopa. New on concrete on blue
engine.

George Lave. And see on water mill.
Lave's wood mill. Lave's plan for mill.
Xylocopa. New on concrete on blue
engine.

Friday May 14.

Wrote sketches for application to
the Transvaal, eng. brought in
also put in the boiler. Both the
and the boiler covered up &c.

Wrote letter to U.S. page 61 and
filled by putting on in main line & was in
power & things correct.
Small 2000 lb. list small dynamo
Killing made by Anderson.

Clear diagram filled with belt and
power gear and line with suffi-
cient force to turn now out of station.

Reorganization. Several models of
x Bar. - came out badly, great
on unknown.

Plan for the engine in the clearing
x Topic of discussion.

Amateur for New Dynamometer
x enough 2000

Saturday May 15

Wrote Mr. Clark in New York for
getting data from Baber. Wilson in
relation to their boiler, economy &c.

Delivered 8 bags from Harnden. Sent
Mr. D. C. Williams 723 Chestnut St.
St. Louis Mo.

Reading of the Transvaal sketch of
different cases. Book 51 pages 167 &c
by Barstow & others on the same
subject. pp. 11-19

Eng of the Transvaal, with
x and repair of

Flammon Sunday prepared some
x Bar. files and g. & others in a very
convenient way in wood.

Motor tests made by Mr. H. H. H.
Book 48, pg 77

Monday May 16

Engine Hord took Hord out of dividing
of engine ^{young} and clean it up.

Chambers - Address worked on two
Mendocino yesterday and finished it today.
for the engine today.

Pump glass delivered this A. M. and
was commenced on them.

Milk Eggs by Union Route 48, 29, 85

Group boards ship to Butler at
King's River.

Cartonage Stamps etc. are all
in the press and prepared soon.
Backfiles for cartonage, etc. of 12
get in good ones. Then in the 9. Carter

May 18

* Milk farms for in which to make
Backfiles studied by Deane
Berk No. 7 - page 124.

Tuesday May 18

Lincoln moved from dynamic station
into the station to be used for amount
for tramway. The motor with one
machine or was run the full length
of track and return with the two
gondolas on the track can be seen
to end of track and back with 9
passengers without any difficulty.
quite a party of foreign local officials
enjoying the ride and a number
of others.

The present set of stamps for
Mendocino Stamps for the day being delivered
by Agnes.

Sparks is being made and expanded
for West Point Military academy.

Volars is being made by Brady

Fiber, 8. Bampier Lamp, exhausted
on Pump.

Test of four Best files Camps at 103 2726
gave from 30 to 32 candles

Calculus for the tramway, Bortha 199
7.10 mds: 30, 170 for Equia - 22 would be

Friday May 21-

Ed in refuge, McKinley, Mr. Edson
particulars of the 10 mds in
valley which had been passed
by Mr. Edson the week before walking
and found quite a quantity of white
lead, gold

Test Mr. Edson making through test
of small dynamite as general and as
motor

Removal of large mounds of
ground by 10 ft. and 10 ft. and for
experimental purposes

Worth Milling on 8 am machine. Some
X mds. was severe lead in spring

at about 103 10 Pa. & 10 Pa. in a number of
have got for all emulsion at end.

Ammonia Carbon. In converting Cypria
sulphide into sulphur sulphate by means
of Platinum Chloride & Hydrochloric
acid, using Florence flask over steam
bath. It was noticed after trials was
later it has had later place for
some time, a loud report accompanied
red flash of light, took place in
the flask. Two cases, one in walking in
flask.

Work general at Klaw. However, meeting
on 10 am. Gang laying out
dredge. Then went at 10 am. for
the 10 mds. at 10 am. in a machine
making mounds, occasionally
stopping to discuss gear in machine
R. H. and then changing the
concrete ship and sailing on
engine motor

Saturday May 22

Testing Bask. pl. lamp at 15 ca. in
gave 9.8 per. saw power. Bats 48 pg 147
Saw 1000 ft. of one of the old
case heard each

Friday Nov. 24th

Monday May 24

Small Sum. up to 100 ft. by drawing
of 100 ft. in the middle of the middle
Mo. a fine map of the

Small Sum. up to 100 ft. by drawing
of 100 ft. in the middle of the middle
Mo. a fine map of the

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of 100 ft. in the middle of the middle
Mo. a fine map of the

Small Sum. up to 100 ft. by drawing
of 100 ft. in the middle of the middle
Mo. a fine map of the

Small Sum. up to 100 ft. by drawing
of 100 ft. in the middle of the middle
Mo. a fine map of the

Tuesday May 25

Monday May 24 again. 100 ft. in
gave 9.8 per. saw power. Bats 48 pg 147
Saw 1000 ft. of one of the old
case heard each

Friday Nov. 24th

Monday May 24

Small Sum. up to 100 ft. by drawing
of 100 ft. in the middle of the middle
Mo. a fine map of the

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Mo. a fine map of the

Small Sum. up to 100 ft. by drawing
of 100 ft. in the middle of the middle
Mo. a fine map of the

are the same in substance, and their church
government is on the same principle. They
all more firmly than any other great body
of Christians adhere to the Calvinistic faith.

Parlagraph

Small Sum. up to 100 ft. by drawing
of 100 ft. in the middle of the middle
Mo. a fine map of the

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of 100 ft. in the middle of the middle
Mo. a fine map of the

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of 100 ft. in the middle of the middle
Mo. a fine map of the

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Mo. a fine map of the

Small Sum. up to 100 ft. by drawing
of 100 ft. in the middle of the middle
Mo. a fine map of the

Saturday May 22

Testing Bask. pl. lamps at 10 a.m.
gave 9.8 per hour power. Both 48 p. 147
Silver Motor and 100 g. m. of the 100
cord. Load each.

*H. H. H.

While rowing on the river in a "four-oared" boat, I
saw a man in a small boat, who was a
cotton picker and at one time was in the
army. He was employed by the Texas Iron Company at
Lafayette. He was drowned at Charlotte, Mo. His body
has not been recovered.

Sunday May 24

Strong sun. up the coast by drawing
*H. H. H. in the morning
Mo. a fine morning now.

At 10 a.m. of 10 a.m. by 10 a.m.
*H. H. H. in the morning
first case.

Small dynamo power for 10 a.m.

*H. H. H.

Small dynamo power for 10 a.m.
*H. H. H. in the morning
first case.

Small dynamo power for 10 a.m.
*H. H. H. in the morning
first case.

Small dynamo power for 10 a.m.
*H. H. H. in the morning
first case.

Sunday May 25

Testing Bask. pl. lamps at 10 a.m.
gave 9.8 per hour power. Both 48 p. 147
Silver Motor and 100 g. m. of the 100
cord. Load each.

*H. H. H. in the morning
first case.

Small dynamo power for 10 a.m.

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cord. Load each.

Testing Bask. pl. lamps at 10 a.m.
gave 9.8 per hour power. Both 48 p. 147
Silver Motor and 100 g. m. of the 100
cord. Load each.

Friday May 28

Pump leards recd from Butler and

x Recd. supplies for pump and on
pump machine

Wash plate sent long. Wash had 2 charges
175-100 Thms. 175-100 Thms. each

Electric bell, perfect shape and fine
Lithium and Lith. 100-200-250-200-200

Electric 4 Absorbent, 200 Miller, 200 Miller x
in good form. J. Ammon. Miller and New
Lithium down to Port Amoy

Magazine R.R. from Hoods, Turkey
x Recd. 200-200-200-200-200-200-200-200

Anders finished apparatus for heating
x glass tubing preparing to blowing
the glass

New pump set up. Lampen and vac
x in 2 1/2 hrs.

Munday, clearing 200-200-200-200-200-200-200-200
x to clear by Dr. Moxes

Saturday May 29

Work general two men preparing tin
to extract R.R. 4. ballasting the base,

gang the ending down conducted to
the lamp. 2 carbons at old factory

Mr. Baskin & Son preparing sulphur
stamp machine, ammonium and

Traveller on Small dynamo. Glass
Shower on pump. by little doing

in chemical laboratory.

Recd. 200-200-200-200-200-200-200-200
in same recd from Hoods, Turkey

Little Brook R.R. 50-200-200-200-200-200-200-200
Large pump set up. Press clear

Friction gear. Rubber tire machine
Recd. to today from adaptably to
the electric locomotive

Get large dynamo. one smaller. 1 each
x Recd. from last on May

Visitors being man with incandescence
lamp in the middle of the room

Sunday May 30

Mission exp. by Cameron examined by
Mr. Edison. did not describe the
apparatus as it was not used to do.

Frank told by Francis to show the
effect of rain and damp weather with
an battery 30 ohms resistance on
this battery. He says 5 ohms would
lose 1/2 of current about the same
used with 1.9 cells.

Edison's experiments on series of
R.R. Bell telephone without battery
but no sound, with one cell battery got
some sound.

Once Mr. Edison testing the new
and battery sent by Mr. Laughlin
and directed Cameron to experiment
in unmering coating pure gold so that
it may be added upon by mercury.

May 2

Mr. Edison

May 2

May 2

Monday May 31

Scholarship report by Utracoph safe
at Rio Edison Light working well.

Over some packages received and time
by Mr. Edison. D.D. Denton. Report
from the organ.

Ordered the apparatus for enlarging ex-
posed plates up to 16 in. for 20 in.
returning order to very high water
vacuum.

Tests of dynamo. Mr. Hinton continuing
series of experiments to determine
class passing the construction of El-
ectrodens and to make economy in
the matter of proportioning the same.

Heater, made by Tordens was tried to
light. It is now to work by electric and
in gradual flame.

Many plate from Edison. Deactivating

Saturday June 5

X Clear power lamp. getting out.

Charles Mr. G. went to New York on 3rd
also in the car with Mr. H. & Mr. H.

Training machine. Repair of Boston Herald.
came against bumper. pretty heavy. 200
X severe damage done.

Syracuse. Mr. Armstrong. but in India
in Laboratory. And conducted with
hydrogen pump. perhaps in place.

Head lamp lamp. 15000 being on
Main power down stairs in Laboratory
for lighting.

Magnesium. Apparatus. piece of
by Anderson. no through. but yet made.

Bumper being carried down to
X Lamp factory.

Visited Mr. Goddard & Mr. Govey.

Had ride on road. run off track at 10th
pm. in one hour nothing broken.

Magnesium. Apparatus. test of
X good results. friction greatly increased. 100
to 1000 lb.

Aluminum. experiment to reduce loss
X made. time by 10. More successfully.

Work done. Mr. Baithan and West
born on lamp making machine. etc.
on turning. Back fibers. Apparatus.

in electric apparatus for outside globe
X Bradley and Anderson on apparatus
to test magnesium friction. etc.

Flame on pump. Fire on them on
extending back of B. G. Gang on
laying conductors. Three moving
X pump. Conductor on small dynamo.

Spoke of return of water by addition
X of salt. Illuminated made for measuring
the amount of water. & Lamp on conducting
the experiment.

Monday June 7

Test made of small dynamo by R. P. H. H.

Then, removed near Washington. Both given
X-ray tubes by Mr. Edison

Aluminum rods by heat of electric
Keweenaw this A. M. in Howard carbon

Visited Chicago & some other underground
X-ray

Mercury, some small pipes being shown
by Edison

Large lamp used. Not broken

Visited Old Mr. Carson left in Canada
Visit Michigan

Small Edison for large 120 H.P. by Edison
Keweenaw & given Mr. H. H. H. to 2000
P.O. Receipts see May 27.

(Old record of film both 57, 400, 100)
Both 57, 201. Camp. Machine

to determine fall of Potentials
in Lamp system. Found forms of
about 100 there each ignus & lamp each

Base fibers. Ready for action. Sufficient to cut out one or two
fibers a piece and very much

Mott Journal #3 [PN-80-06-08]

This is the third of six pocket notebooks used by Charles P. Mott, a member of the office staff at Menlo Park, to record daily activities at the laboratory. The entries from these notebooks were used as the basis for more extensive entries recorded by Mott in Menlo Park Notebooks #53 and #117. This pocket notebook covers the period June-July 1880. The front cover is labeled "152" and is inscribed "No. 3." The book contains approximately 40 unnumbered pages.

PN-8006-08
E-326

Basal film lamp tests
No 39-216 to end

At 1000 ft. elevation of
dormitory building, No.
39-216 to 244, to
the top of the hill.

Tuesday June 5

Our Fredre bags of rice from
Virginia Minor and this morning
Virginia also has bags of rice from
Virginia, in yard from this & road

Shirley, Mr. Bailey, Diego de Castro,
Grisol de Labele, & Mrs. Pucka

See, rem. Ena R.R. being down up in
down on the railway station

Maria in which to cart ride
Past, from the road to the station
by Mr. E. for Thomas to Maria

Washed Mr. E. trying to prevent with
you attacks of mites and water
forced up through the car on change
to be washed. 11.9.

Plaster Baled in N.H. to truck
has sailed

Charles Wood and Engine Location
Francis to make list of aa of Plaster
lost part of case 8 1/2% 15.79% - 10%
the center runs from 16% to 15%

Wednesday & Thursday - E.R.R. by
Albany, Iowa away during the
5000 find apparatus on which
Moffat was at work. Sunday pro
cessing in on Allen's gas & water
pump in garage room and that
some repairs will have been made
themselves find also than out
York mounting various kinds
of the pumps and sending them
to Camp factory, Leiden, etc.
at work on cutting in Back plates
the hammer of which was finished 84.

Friday June 11.

Charles M. Edison on 11th

Work under Dean find the new
plates of wood milling back in
net Rapp

Magnetic Bricks which being made
by Mr. Kauri.

Part of some getting out by Brady
and carting

Quadrant circular, five or more
in course of construction

Magnetic gear which of made by
Mr. Edison.

R.R. Men working on Colonization

Reuther Bradley joined with the
pasture owner for cutting out flies and
Klein in Lakeland, got out some pine
blossoms.

How. En. by Mr. E. C. C.

Monday, June 15

Alumina *effluvia* by *nitrate*
Xolampson between Spring & *nitrate*.

Lipik River Camp, India abt. 46 S. and E.
Fishes being taken -
Fishes being made to study the contents
etc. around camp. (Boat 48 pgs. 113)
Camp Faculty, river type lake
+ about 500 young fish - purple

R.B. Mather cross correlations and
+ scales and small groups

Leaf hand on hand cluster of
1/2 cluster by clustering style in part
of motor. Still seen by Mr. Brown

Copper cylinder, patten made for
fasting to try to determine the
power. Friday June 11.

Yaying conductor, work suspended
for a few days. No more rain.

Blank marine aerosols are
frequent in the industrial
districts and are a warning of
the damage being done.

Wednesday, June 16

Tailings 5' pass from Lazard River
+ from Pine River.

Discipline: Expt in Music

Albert M. Bacon, of the University of California

Attention to appearance, under most
 severe means. Dr. E. thought symptoms of
 Kartagener's syndrome supposed to have formed 9
 cases E. & others here the globe,

Spectroscopic exam of lamps by Prof.
Blomberg. All fine carbons & iron carb
two lines of Rydberg's.

H.R. Dr. men of Penn. Road could
about 100 hours to brighten light

Thorn of Resting, Est. 1894, Lane

Tuesday June 17

Camp. Eschschumöl mit Mica, baltica
am n. rag. Länge ca. 100 mm
Hypsig. d. n. l. Camp. will. ca. 100 mm
2. n. l. n. n.

Polio in Atlantic - poor conduct
X see put in the 6th

Experiment in Kida station. Mass
Kagami in W. C. common Salt +
Magnesium Ferrocyanide. Solution was

Magnolia separata glauc. fls. & leaves
fragrant & falling sublamina beneath
& leaves the petioles & branches

Magnus. Hätte small dynamo
Smogueli Tschä per Zuckse, Hordland.
Anleitung d. H. C. S. S. S. S.

Three Day Picnic in Two Continents

Friday June 18

Carbonization of leaves with varying
impregnations to study the effect
of pit, manner, have included etc.
C. 100. 100. 100. 100. 100. 100.

Part in lamp room by his S. with
single joints another in passage.

900 - in the south is 36 sand the
originally would be 26 but different than
you would find it before it's done.
The sand is - 70 east side, but the
nature of the small lumps arranged
for the Borth No. 63 page 167

Source not developed by
KMR. Upl. No information

Colocera chironomus pup. made by
+ *B. pilosus*

Make sketches of major brass
Xmas & give note from which
to make P.C. drawings

Saturday June 19

High as English in which is were
Maca Michina to Estanola. Son alla

X Engine being painted by French.

Grade 5 by Moses Successor

Grasshopper - very common on prairie
Hopping occurs on stunted about 100 ft
Habitat: grass of woods, some are
spacious for more than 100 ft
on prairie. Also in some
in and especially in the
best of prairie, but also in some
on prairie and some on prairie

Monday June 21.

Hymanonitis belt changes to dark shell.

Hymanonitis pulchra about 10 A.M.

Half lamp. Lites 700 ft. 4. P.M. at 11.

Land.

Specific gravity: Abundant for testing
by Meier. Result 68.99 at 22.

Two fresh & being drawn from Defect.
+ Old line of Penn. etc.

Ellen Kinsas. Learning N.H.

Engine, and a whole lot of iron
K. Knight. Has a lot of iron (bricks)

Condition in West of New York

of stone pieces & New York case
but in.

Tuesday June 22.

Half lamp. Lites in iron 10 ft. 100.

Handed to test slaying - general
K. Knight 2nd. Lites are 4 ft. in. Iron 100
Result 67.65 at 11.

Condition of New York dynamo. The 2 in
K. Knight. Lites are 4 ft. in. Iron 100.

K. Knight. Lites are 4 ft. in. Iron 100.

One specimen in defining goldstone
K. Knight. Lites are 4 ft. in. Iron 100.

Small full dynamo on New York
K. Knight. Lites are 4 ft. in. Iron 100.

One specimen in New York. Lites are 4 ft. in. Iron 100.
K. Knight. Lites are 4 ft. in. Iron 100.

Back of New York. Lites are 4 ft. in. Iron 100.
K. Knight. Lites are 4 ft. in. Iron 100.

Wednesday Aug 23.

Alvin Clark went to visit sister
Thomas ground near Philada.

Exp. with copper wire in little water solution
Cliff ch carbon connection. Green
type battery in solution with
candle from lamp above on
the wire a solution was added, the
showing the solution the more local the
conjugating action.

Hay lamp, with 67 wires and 100
22 candles. (Thru in little
Kohl's of sample for 3.13
but took 20 sand's 6 per hour from life
Kohl's solution. Then passed from
to wet plates in which is a solution
Kohl's length plates. 200 plates made
in a time by wet, brought to
out put of wire

2-157

From this day name put up in Rome
Rome battery same shape of other
Prachin, with 150 wires not enough for
one lamp. to be changed later as 200

Exp. same as by R. M. W. & same
Manned again by Hain & Hain

Wish to put up & Baly. Love other friends
Agate also being a lot of work

White Acid. up to 100 by 100 candles
From calcium carbonate, was taken
from the acid. with 100 candles
from the acid. with 100 candles
of White Acid. found

Thursday June 24

Anna Seligson working pulling up pump
Back place lamps testing No. 39-218

Alvina M. E. Kim has to go to school

Geo. Short working pulling up pump

Geo. Short working pulling up pump

Geo. Short working pulling up pump

Geo. Short working pulling up pump

Lamps 3 in. 13 in. - 2 in. candle

Lamps 2 in. candle 2-30 lamp

Lamps long plus 1-12 great

RR from coming down to test 5 days

on car

Magnolia Sebastian Heron
Xtension place for large for
general use

Friday June 25

Hidden tree and growth for the garden
X a lot of seeds of general use in stone

Loke Bradley cutting from Ben's tree

and palm leaf for experiment

Paper Scientific American July 3

Know on how description of Cumbria

Electric lamp, very similar to E's

Test in low and high vacuum

Both lit at 11.7 to 17.3 paper carb

Walter's removed this a.m. and lamp

again yesterday 3 1/2 ft. per
candle took 2 1/2 to 3 days

Saturday, June 26

From Mary's place, 10:15 AM in
Camp for day, 11:15 AM

Yellow (orbs) carbonized thin shells
Karn 10:15 AM. 10:15 AM

Test Camps. Both 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

11:20 AM. 11:20 AM. 11:20 AM

Don't partition lands. 113 lots. 164. Stamp Reg. Bldg. Remodeled 1941. 42 lots.
192 ft. 164. low canyon 12, 164. P. 164. No blue. High vac. roads.
5000 42. 2295a.

Chlorella esp. affects blue sailmoss
Thrombium *Thrombium* in culture, and
to contain hydrocarbon

[illegible]

June 29

Subsp. *Schizanthus filipes regularis* -
Birk. 112 pgs. 251 to 350 very fine
amer. in Birk. No 103.

Blank Machine under way again
 1/2 in. Barium Fluoride 102

2nd: Bentley's 790 cold
 4th: Canada Bay Blue life 1/2 in
 1st: 103 pgs 5-

Flac. no blue. High vac sealed
off in 35 minutes.

Comp. p. *Stabinello* carbon. 108 pgs 17-11.
 Plums at 13 c. *Lophanthus* 11 c. 1 h. +
 realia 1/2

Electus Messinger & Co. Sales Co.
again received by Mr. C.

Phytomyza 10.5 x 0.2 Bush 1. x 12
Willow 10 x 10 Bush 1. leaders only 9
only

572-71 for the per candle

Small piece of paper...
from the bottom of the box...

Mr Edison Sent it from the City and

Wednesday June 30

Back Camp 5.12 2800 ft

at 1800 candles a little blue

finer 1800. May be about 10 minutes

2810 ft. from the corner. Aug 2800

ft. the candles. 1800 1800 = 1800

2800 ft. 1800 candles. 1800 1800 = 1800

at 1800 candles 10 ft. the candles

Small dy. 1800. 1800 1800 = 1800

May be 1800 min. 1800 1800 = 1800

1800 1800 1800 1800 = 1800

1800 1800 1800 1800 = 1800

1800 1800 1800 1800 = 1800

1800 1800 1800 1800 = 1800

1800 1800 1800 1800 = 1800

1800 1800 1800 1800 = 1800

1800 1800 1800 1800 = 1800

May be 1800 min. 1800 1800 = 1800

1800 1800 1800 1800 = 1800

1800 1800 1800 1800 = 1800

1800 1800 1800 1800 = 1800

1800 1800 1800 1800 = 1800

1800 1800 1800 1800 = 1800

1800 1800 1800 1800 = 1800

1800 1800 1800 1800 = 1800

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1800 1800 1800 1800 = 1800

1800 1800 1800 1800 = 1800

1800 1800 1800 1800 = 1800

1800 1800 1800 1800 = 1800

1800 1800 1800 1800 = 1800

1800 1800 1800 1800 = 1800

Large Magnat esp. to be made
30 to 100 page 270 drawn by E.

Large iron lamp altered and used
X paper

Small iron lamp altered and used
X paper

Small iron lamp altered and used
X paper

Magnat's Separata which gives
X plate from which to make P.O. Draw
Capacity, 40 Concussion Iron S. 1/2 p. 200

Large Elm Greenish. Amalgam
X plate on drawing and with sketching
finger Railroad

Saturday July 3.

Journal of Amalgams, cut and
X paper with Babbitt metal

One from Road Mass. contains gold
X first from by Mrs. E. 12 Mass.

Large made with altered connection
X paper, and X paper taken to present
if possible the 1/2 p. floor of mercury

Small Vellum and removed to a 1/2 p.
X paper

Magnat's Iron. Iron. Large iron 1/2 p.
X paper, and X paper, and X paper

Large iron 1/2 p. of the iron
X paper, and X paper, and X paper

Platinum folioides in alcohol.
- pyromorphous mass & Platinum
- Carbonized one dispersed with
- solution and recarbonized, etc.

Pullman bar, in tracks

Wednesday, July 7.
Brake, light, road etc. and Elec.
lighting of Cranway Rail Road
- kitchen made by Mr. Carson
and given to Hull, on Sunday.
- Carbonized powder. Fiber cutting
- Tools, sketch for a dining
- table. Carbon splinter, two on
by conducting current to lead to
them down where now for tracks
with dust, note both sheets
by Mr. Carson during my absence
See in Nov. 105 pgs. 5. List of

Application of notes & plans to
be made.

Now commenced digging for tunnel
- plan of a boiler engine, adjoining boiler
room,
- Off. Garrison's body, on Monday, 1891
- track

Two Ammeters were slightly injured
yesterday by a fire.

July 7.
Larger furnace for recarbonizing
- keeps by John etc. plates show
- plan cut on a carbon plate, and
- large bricks being drawn for boiler
- plates probably from the same place
- new drawings of the boiler and dishes
- John, Benson and and handle
- of above work at the same place

Pump lamp used on land and in
vacuum needed off between gauge
and drop tubes. Left to burn to
note whether khalap could be de-
livered by fall of mercury in gauge tube.

Working drawings of ^{one of} applications
of MIRA and emanation on page
3 Bottle No. 105 commercial today

Delivery Car raised for pulling out the
magnets & for stake which is being
repaired jointly by Smith.

Bill Plimpton repaired a machine
of 1000 ft in length and 12 ft
in diam. 120 ft. from base and
then

Scamp with *Sp. ar. vittatus*
Scalid. sp. inc.

Thursday July 8.

Lamp 4: Sparker electric. Box 64 sq.
ins. One side of lamp cork-lined
bottom 16 sq. inches covered with
Sparker lamp in igneous cement, color
in sparker tubes in double force vacuum
Chol 1011, pgs 10.

Girls state lightning and are removed from
each floor near top of Hill.

6th Wash. Loop in camp where it
 tested 8 ft. H.P. 16 candles bush
 at 44th N. line - 20 inches 2000
 21st line 21 ft. H.P. 16 candles and 1000
 22nd line 22 ft. H.P. 16 candles and 1000

Sparker, vol. 2. Chlorine size in place of
Kerosene

Induct. pile. Two large ones at Cap. 6.
Cast on ground 4 m. but up

Shall Maguire around six Capers 1052

Illustration picked for leading L. L. fact

Spikes Mr. Schenck and Mr. Schenck
write three California friends

Gas pipes Cunningham & Co. in pulling
in Gas pipes at Lamp Factory

Friday July 9

Robert Leventhal American date July 12

discussion of Edison's invention

Apparatus also by Besenberger's

Workmen of time from Sham Eng 100

A. P. 76 Same C. H. P. 111.3. Lohmann

calculated Eng. 2. 26.5. C. H. P. 111.3

26.4

Some gear set running in the

Station to cross. Negative also in station

one running each night broken by engine

Long Carbons 275 ohms color 1000 114.0

274 time 10.6.9 per hour was 116.2

Ward Miller Dean running the four
spec. cutting. Spent the from one
correctly shaft to polish the
bearings

Albert W. M. Edison went to N. Y. 11.22

Ret. 2 early evening

Maguire's work, hoping to practically

use Box car.

Captain Taloon, whose like value of

series mile recorded Mr. Schaff of

Capitulation on motor principle

Brook No 108 No 1142

Monday July 12

Visited Mr. White

Yard on path at sea a blue air lamp
known. 11.15. M.

Photograph the engine. Machine on
X-ray of picture. End of lamp 10.15. M.

Station on either hand out of
X-ray Machine. When multi. Side of
in use.

These all were in some light. They are
put up to air in lamp. They are
X-ray pulling up before the blow
in front of the vacuum. made

Open the lamp. Note too at 11.15. M.
2.0 drawings of double lamp. 11.15. M.

Circuit changes. From a motor
and by resolving fully a
Yard on path at sea a blue air lamp
known. 11.15. M.

Photograph the engine. Machine on
X-ray of picture. End of lamp 10.15. M.
Station on either hand out of
X-ray Machine. When multi. Side of
in use.

Balch Lamp & Machine	1.02V
Bain; Miles Exp	1.03V
Cats. Nfilm Post Lamp	1.03V
Nfilm, Lamp of Lamp & Diagram	5.9V
Carbide Lamp	1.05V
Franklin	1.04V
Original Sketch of Machine for Lamp	
Lens glass for Lamp - Both 50.00	1.09V
Wagner Lamp - Both 5.00, 5.00	1.09V
Herring	1.01V
Edison	1.05V

On was taken and
 soln of Potassium Cyanide
 in water added to form a
 thin paste, through which
 and its copper plate
 the two poles of
 the and the wires, a
 of silver granules
 the plates.

56 canals 5.4 mm
 border 800 canals
 home, porous 2 1/2 mm
 285 ft the sea sand 2.4 mm
 ft the for 9 canals 2.8
 Canals 2820 ft for 2.8 mm
 83 days 183

Mott Journal #4 [PN-80-07-14]

This is the fourth of six pocket notebooks used by Charles P. Mott, a member of the office staff at Menlo Park, to record daily activities at the laboratory. The entries from these notebooks were used as the basis for more extensive entries recorded by Mott in Menlo Park Notebooks #53 and #117. This pocket notebook covers the period July-September 1880. The front cover is labeled "153" and is inscribed "C. P. Mott No. 4 May 14. 80 to Sepr. 23. 80." The pages are unnumbered. Approximately 70 pages have been used.

Then Bradley getting out some Bamboo
with ends in X. 250. very difficult to get
out in frames & over in sun.

Photographs of shafts of Yellow Jacket
mine secured and discussing means
of applying electric cables to pumps
for use in deep mines. That mine now
working nearly 3000 feet below surface.

Thursday July 15.

On separation glass sheet with two papers
pieces of tubing across made for D. Man
to continue experiments on the separation.

Returned Mr. Glantz from vacation drive
July 2.

R.R. grade line at noon by corner
of the boys' brake chain bottle and
flag jumped off except the bottom
we got hurt some and car brake
bottle will stop up.

Loops, Mr. Retallick painting pieces of
Bamboo loops before casting them.

Traces from Bamboo, skin & age. 21% sheets
and dimensions. Book No 102 page 21. Andrew
making the traces.

Waters, Mrs. DeWitt & Mr. Paul. Washington D.C.

Conductors to Street lamps are down, but
not all around commenced May 12 90.

Two crabs. Saw apparatus for work at
Kamp Factory, machine from Rahway, N.J.
put in "East track" day day.

Friday July 16.

Mr. Glantz gone to Canada.

Kamp Factory made pump for
Kreel secured this AM.

Installing track, commenced putting
Tanna felt under R.R. rails to make

Conductors tested by Mr. Upton Broth.
 103 page 145. 18 wire chain wire to wire.
 30 chains. Ground 25.4.43. Cannon
 Circuit wire to wire 1.4 ground. 11.2.48.2
 Ground circuit " " 61.8 " 25.6.52.5
 Cannon wire " " 1.6 " 5.8.4.9.4.

Word Miller Dean got machine setting
 the loops beautifully and I commenced
 work on the saw for sawing them off.
 Mr. Edison inst. the kinetic lay in to
 the wire and before for making the
 extending clock machine. Time 8.00.

Visited a large party of friends got to
 also one of the conductors Mr. Lane went
 and a man with a clock and a clock.

Reorganization: Mr. Nathan Pearson
 for reorganization some conductors by
 dipping wire in oil spray and electric
 solution of spray.

Saturday July 17.

Allegation some conductors of wire but
 ground to give 38 ohms resistance
 finished by force.

Allegation. Study & Cause on head from
 go representing full knowledge of the Es
 Mining processes and applying for
 wires to work.

Camp 1277. Not true. Bunker's machine clock
 time about 5 minutes at 12.00. 40.00.

Visited Pearson, also Mr. of the old.
 X. Also spoke with by 5.00 to Adams
 conductors. Men of work in wire all
 day but 25 wire circuit test a new
 afternoon. 10.00 is here went.

Worked on at New at 12.00. 12.00 and
 on 12.00 at 12.00. 12.00. 12.00.
 Paying of conductors, Dean's work. 12.00
 finished and 12.00. 12.00. 12.00.
 Water is interesting. 12.00. 12.00.
 Pearson & Nelson. 12.00. 12.00.

Tuesday July 20-1880.

Track test, Borris 187, pgs. 77. Bottom tracks
* - Thinner, disconnected at end of inner
Lava sails, far side 112 mm. Paper 124, 22

Clamp Machine. description of Inf.
 No Model by Mr. Balaclava B. 10.2p. 28

Am taking six men sawing floor and
clearing brush. Doughan pump
prepared for well and pit.

Small Engine, taken apart and prepared
for shipment, from Lamb Factory.

Fiber specimens, learn making two, one for
each side or edge of fiber. It is secured on
knock so binder may use both hands for
placing the material, can save use of one

Water Engine run at Norw. to pump water
out of Tona and then 24 cleaning it out

Gas Carbonizing furnace, received and
ready for gas retorting.

Phalaris. Gooden & Lowry with print.

On Monday Mr. Edison sketched designs for washing ore, and gave to Mr. Fox to make the apparatus to experiment.

Wednesday July 21.

Paper Loop tested. at 44 Candies tested.

18. M. showing an unfavorable comparison with Bach or Bambo. 13° 11.5' pm. S. 2
Brue 710103, p. 2194

See Eng. Office design in investigation, and
study of Engineer design of prototype electric
locomotives, and use in rail innovation
Baltimore, Md. 1914.

Gov. Noyes commenced putting new
gear on the locomotive

Abent, Mr. Balchman went to N.Y. 11th to
his family off to Europe

Arrage of Bar^{Galangana} & Bambra so far tested.
 1st one a dry cask from 6 to 12 m.
 Bottle No 112 - page 74.

Blow the air. Two lamps tested at
extra 11.

Revised current. No. 100. Lamp. Run at 100.
Current 11 amp. Bash. Run at 100.
20 Minutes. Both lamps 257.

Magnum case, Regina. - worked through 12.00
thru. Break through 12.00.

Carbon test. Mr. Chien suggests bonding the
lamps to detect self spots & attachers on
attachment, for a kinetic brush, in 10
seconds may be heated and defects. No
bad ones rejected, without self 10.00.
in lamps, 30 carbons tested at a time.
Both no. 100. 257.

Thursday July 22

Dynamometer open car 16 No. 15. Start
top case 100 amp. 64 to 100. 10.00
No. 100. 10.00. 10.00. 10.00. 10.00.
Current - 10.00. 10.00. 10.00. 10.00.
10.00. 10.00. 10.00. 10.00.

July 22

Lamp. Run. Two lamps tested at
100 candles - 15.4. 20. Minutes. Both 100.
page, 262. Summary of tests Both 12.00. 9.

Longitudinal arm tests of whole body. Tests
record. ^{10.00. 10.00.} 10.00. 10.00. 10.00. 10.00.
on ammeter case on very nicely.

Gas. Man. Settling. Arm and sheet
gear on electric locomotion.

Spoke, between rails. 10.00. 10.00. 10.00. 10.00.
30 volts no. 10.00. 10.00. 10.00. 10.00.

Water. Heavy. 10.00. 10.00. 10.00. 10.00.
No. 10.00. 10.00. 10.00. 10.00. 10.00.
10.00. 10.00. 10.00. 10.00. 10.00.

Tests. 10.00. 10.00. 10.00. 10.00. 10.00.
10.00. 10.00. 10.00. 10.00. 10.00.
10.00. 10.00. 10.00. 10.00. 10.00.

Friday, July 23.

Madag. July 23.
Papua. New Inst. Agric. publishes this
proposing a long descriptive article
on the Native Rice Road and its
adaptability to elevated roads.

Rail insulation rails tested this A.M. 8:00
Five rails laid down near Laboratory
for experimenting on track insulation.

Pauliographia subit. luttens. Pholens;
Electric case.

Small Eng from Lamm's Factory shipped to
Hudson Mich

Bombus Crass. 18 candles. Imm'd 68 hrs
 like in this Lamp described above.
 Missing after 21 minutes, did not return
 some birds taken from the 20 minutes. Book 112
 page 127

P.D. Drawings, General design for building a
junction to Milwaukee Electric Western Force,
also for, placing ends of cables, New
Post Office, through main sewer at works
Chicago Tax Board - Milwaukee meeting 1904

Saturday July 24

Papers closed today has also another
X article on the Edison electric locomotive

Alfred Brown, Esq. 100 N. 4th St.
St. Paul, Minn.

*Back film two bonds from Baltimore recd.

Lamp Linn, Hickman commenced spreading
X cables with Linn Material.

Thin former, frame not stiff enough to
stand the necessary pressure. Diagram
shows Brazing Model for iron frame &
different solid layer.

Endorsing same. Auction making with
loan sent since to be drawn on ship
along in shipping.

Wash genuine, then keep in gas. Wash
in a freezing journal. Pasture
landward of for dust. Clean in
friction, white on cloth. Brown.

Tuesday July 27

Visit Prof. Barker & friend now in
for can come to see, & see the can
now Barker & his mother,

Lamp with burner attached. I had
great intention to try to burn the
the carbon with carbon paper from
carbon the other.

Blackish tub. lined. d. 8. 10. 12. 14. 16. 18. 20. 22. 24. 26. 28. 30. 32. 34. 36. 38. 40. 42. 44. 46. 48. 50. 52. 54. 56. 58. 60. 62. 64. 66. 68. 70. 72. 74. 76. 78. 80. 82. 84. 86. 88. 90. 92. 94. 96. 98. 100. 102. 104. 106. 108. 110. 112. 114. 116. 118. 120. 122. 124. 126. 128. 130. 132. 134. 136. 138. 140. 142. 144. 146. 148. 150. 152. 154. 156. 158. 160. 162. 164. 166. 168. 170. 172. 174. 176. 178. 180. 182. 184. 186. 188. 190. 192. 194. 196. 198. 200. 202. 204. 206. 208. 210. 212. 214. 216. 218. 220. 222. 224. 226. 228. 230. 232. 234. 236. 238. 240. 242. 244. 246. 248. 250. 252. 254. 256. 258. 260. 262. 264. 266. 268. 270. 272. 274. 276. 278. 280. 282. 284. 286. 288. 290. 292. 294. 296. 298. 300. 302. 304. 306. 308. 310. 312. 314. 316. 318. 320. 322. 324. 326. 328. 330. 332. 334. 336. 338. 340. 342. 344. 346. 348. 350. 352. 354. 356. 358. 360. 362. 364. 366. 368. 370. 372. 374. 376. 378. 380. 382. 384. 386. 388. 390. 392. 394. 396. 398. 400. 402. 404. 406. 408. 410. 412. 414. 416. 418. 420. 422. 424. 426. 428. 430. 432. 434. 436. 438. 440. 442. 444. 446. 448. 450. 452. 454. 456. 458. 460. 462. 464. 466. 468. 470. 472. 474. 476. 478. 480. 482. 484. 486. 488. 490. 492. 494. 496. 498. 500. 502. 504. 506. 508. 510. 512. 514. 516. 518. 520. 522. 524. 526. 528. 530. 532. 534. 536. 538. 540. 542. 544. 546. 548. 550. 552. 554. 556. 558. 560. 562. 564. 566. 568. 570. 572. 574. 576. 578. 580. 582. 584. 586. 588. 590. 592. 594. 596. 598. 600. 602. 604. 606. 608. 610. 612. 614. 616. 618. 620. 622. 624. 626. 628. 630. 632. 634. 636. 638. 640. 642. 644. 646. 648. 650. 652. 654. 656. 658. 660. 662. 664. 666. 668. 670. 672. 674. 676. 678. 680. 682. 684. 686. 688. 690. 692. 694. 696. 698. 700. 702. 704. 706. 708. 710. 712. 714. 716. 718. 720. 722. 724. 726. 728. 730. 732. 734. 736. 738. 740. 742. 744. 746. 748. 750. 752. 754. 756. 758. 760. 762. 764. 766. 768. 770. 772. 774. 776. 778. 780. 782. 784. 786. 788. 790. 792. 794. 796. 798. 800. 802. 804. 806. 808. 810. 812. 814. 816. 818. 820. 822. 824. 826. 828. 830. 832. 834. 836. 838. 840. 842. 844. 846. 848. 850. 852. 854. 856. 858. 860. 862. 864. 866. 868. 870. 872. 874. 876. 878. 880. 882. 884. 886. 888. 890. 892. 894. 896. 898. 900. 902. 904. 906. 908. 910. 912. 914. 916. 918. 920. 922. 924. 926. 928. 930. 932. 934. 936. 938. 940. 942. 944. 946. 948. 950. 952. 954. 956. 958. 960. 962. 964. 966. 968. 970. 972. 974. 976. 978. 980. 982. 984. 986. 988. 990. 992. 994. 996. 998. 1000. 1002. 1004. 1006. 1008. 1010. 1012. 1014. 1016. 1018. 1020. 1022. 1024. 1026. 1028. 1030. 1032. 1034. 1036. 1038. 1040. 1042. 1044. 1046. 1048. 1050. 1052. 1054. 1056. 1058. 1060. 1062. 1064. 1066. 1068. 1070. 1072. 1074. 1076. 1078. 1080. 1082. 1084. 1086. 1088. 1090. 1092. 1094. 1096. 1098. 1100. 1102. 1104. 1106. 1108. 1110. 1112. 1114. 1116. 1118. 1120. 1122. 1124. 1126. 1128. 1130. 1132. 1134. 1136. 1138. 1140. 1142. 1144. 1146. 1148. 1150. 1152. 1154. 1156. 1158. 1160. 1162. 1164. 1166. 1168. 1170. 1172. 1174. 1176. 1178. 1180. 1182. 1184. 1186. 1188. 1190. 1192. 1194. 1196. 1198. 1200. 1202. 1204. 1206. 1208. 1210. 1212. 1214. 1216. 1218. 1220. 1222. 1224. 1226. 1228. 1230. 1232. 1234. 1236. 1238. 1240. 1242. 1244. 1246. 1248. 1250. 1252. 1254. 1256. 1258. 1260. 1262. 1264. 1266. 1268. 1270. 1272. 1274. 1276. 1278. 1280. 1282. 1284. 1286. 1288. 1290. 1292. 1294. 1296. 1298. 1300. 1302. 1304. 1306. 1308. 1310. 1312. 1314. 1316. 1318. 1320. 1322. 1324. 1326. 1328. 1330. 1332. 1334. 1336. 1338. 1340. 1342. 1344. 1346. 1348. 1350. 1352. 1354. 1356. 1358. 1360. 1362. 1364. 1366. 1368. 1370. 1372. 1374. 1376. 1378. 1380. 1382. 1384. 1386. 1388. 1390. 1392. 1394. 1396. 1398. 1400. 1402. 1404. 1406. 1408. 1410. 1412. 1414. 1416. 1418. 1420. 1422. 1424. 1426. 1428. 1430. 1432. 1434. 1436. 1438. 1440. 1442. 1444. 1446. 1448. 1450. 1452. 1454. 1456. 1458. 1460. 1462. 1464. 1466. 1468. 1470. 1472. 1474. 1476. 1478. 1480. 1482. 1484. 1486. 1488. 1490. 1492. 1494. 1496. 1498. 1500. 1502. 1504. 1506. 1508. 1510. 1512. 1514. 1516. 1518. 1520. 1522. 1524. 1526. 1528. 1530. 1532. 1534. 1536. 1538. 1540. 1542. 1544. 1546. 1548. 15

Carbonization, with abundant coal in
Bara, and in Morlaix, to learn a little
the Hydre carbon will unite with the
vegetable carbon, suddenly, to the
union, in barometer, forms with
sliding, solid, even first stage.

Spelionites test. made by Upston
on the Back region of Bismarck 5-8-42

Set of Back Land section from Newberry
1891, 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900, 1901, 1902, 1903, 1904, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571

Carbon, deep black in Russia in the
Moules, came out good. did not appear
to have absorbed much nitrogen from
fire. It was dark, broke into antimony
to naked eye, but under microscope
showed some small particles of iron, iron
in Paraffine, heated over red light

Wednesday July 28.

Carbonization Mr. Balaban containing
gaps with Kerom products, in carbon
models. 13-105 page 18-2, using white
is a main with products

Carries faecal, germinal, intestinal
via blood vessels, liver & intestines, forming
putting taking one prompt & connecting
with the blood system.

Not separable, Mark likes the rotating
table separation, satisfactory enough to
convert further break with previous
edition to better.

Photo. of Lamp factory, ^{Chennai} India, under
good no test of power

P.R. The dynamo currents applied to
Rail road, now saved and has
made an advance.

Telephone, wires run and communication
secured between office & Hinesy's Bldg. by
wires.

Roller sluth, delaw finished by Mr. Gault
Winters. Lumber telephone man. Mr.

Thursday July 29.

Rails, in Lathrop's 1st connects to
Kaiser's electric cars over 800 ft.

Roller skis. From the morning until
the late afternoon of March 2nd
and 3rd. Second shift class.

Dynamis *Shab* *one of the same*
has been *seen* *in the* *mountains*
at *the* *Dynamis* *is* *up*

Getting Division M.E. gave Bohna that in order
which to make alterations for better uniform in
uniform.

[Faint handwritten notes at the bottom of the page]

for 2000 at 71 cents per lb. for
Reston. Box 112 Page 694c
They said they didn't intend to collect
gas fees attempted to build and gas
lines in other areas of the.

Friday, July 30

Papers. Head to day has been
partially refer. from indications
concerning the behavior of the
light on St. Lawrence Columbia

Carbonization. Some coals made into
gas passing through molten
come out beautifully silver grey.

Magde. cell. test of Bergmann + W. G. R. 25
page 25-26.

Quartz was broken. Mass not at work and
furnace appears completely.

Electric insulation, large smoking started from
from the insulation & tar, becoming frantically
from 25 to 26.

Drain pipes, run from small engine
to one corner & 15 ft. from drain
pipes, running through laboratory is.

Vacuum vapor lamp, had tube attached
in which was put kerosene oil, and
after vacuum was lost, 17 ft. above
72.5 ft. 1300 ft. low at 16 candles
lamp, vacuum was lost. R. 25 page 89.

Light was, and given to run again
all night.

Hydrocarbon, long globe made and
sublimation tubes sealed in.

for passage of gas. Rubber stopper fitted
on tube for wires and to one end of globe,
gas lit at outlet and current sent
on electricity in globe, quality augmented
by the hydrocarbon.

Hydrocarbon, for use in running for
current for lamps.

Visitors, Dr. L. & Dr. L. & Dr. L. & Dr. L.
from Adams indicated. Bond.

Saturday July 31

Mercury, about 100 lbs. 12 ft. jar used
at Lamp. Electricity for vacuum, 100 lbs.

Rails installed in laboratory yard with
rubber cloth and iron washers under
spikes.

Exp. Carbonized furnace set up in
Chemical Laboratory.

Gasoline Vapor 6 1/2 Cadon Lamp Insects
Kash night 160 candle 90.4 others 88.8
voter 8.2 per. imp. Kovs No 112 page 99

Utes, quads in var. Colors & textures matching
brown & white in some cases, into eastern
and by association. And more making
eastern forms, different name for the
new eastern material. Ben. black on
white, brownish, yellow surfaces and
pale brown. With thin or fine
leaving specific color, brown, green.
Shedding glass beds, or skin for
shedding glass with eating. Brown
making fiber inner material. Some
table like for glass. However at least
Eastern. Consider gang wrapping
starting 25 min. early. Carpenter
at work on large magnolia separate.

Absent Mrs. Bateman - Editors - Bright
Keast on 3rd -

Monday August 2.

films, letters, cards, miniature plates, folding micrographs
with a glass within bottom of base and
Gauge, 0.12. Section in opening of base so by
passing the glass along the film, any reaction
on the film may be observed by the magnifying
glass, devised by: Parishon Book No 106, page 35.

At Camp Lac-Long, Nov. 22. Fine day.

Caroline Barton, Maria, Susan, Virginia, Elizabeth
 Caroline, in 172, at 72 & last 2 only, & Maria

Calomelic lts - made of a comp. of lts. and
X₂ lts. in local lts and again tested
in Calomelic. Same results.

Plumb in use about 4 weeks on the other
the deep stone history, a great.

Lamp 6 in. filre. Bamboo. Burma. $\frac{1}{2}$ 24 in.
 Nearly 7 per hp; 71. candles

Tuesday Aug 3.

Repaired Horace's engine, some sketches
and comments of this Edition of
X Captive Falcon's Experiment. also some
write article on Anna's Mangalins

Engineer Horace left this A.M. and Mr. May
has been engineer to day.

Gas furnace. not enough air blast
from Horace's gas. Horse kept with
bellows at up and furnace heated.

Plumbing, looks now brought up to Mich.
about 1/2 in. the lower stoppers closed.

Research. St. Maria has been engaged in
quarrying, a work in searching for all quantities
in sufficient commensurate with the size of the
barrels, vacuum, &c.

P.D. drawings. Carbon furnace, double, and
X lamp. Lamp with straight carbon, on
write two straight carb clamped at 1/2
apart for carbonizing in paper, some carbon

2 carbon loops at right angles, sizes
fixed in order of inner tube, brass through
inner tube sealed globe.

Wednesday Aug 4.

Plumbing, became job, double day, only
1/2 finished at work in P.M.

Double Kettles. tonight making a
specimen while the Kettles are running. &
Means making another for gas furnace
or in furnace for making down.

Barrel from Cajunais engine tested
102 lbs. 100 lbs. - 118 lbs. 166 lbs.
fallen accidentally 112 lbs. 20 lbs.
Dried, run through furnace with exposure
7.5 good carbon gotten out in next night
along.

X Carbon straightening. Carbon straightening

Thursday Aug. 5

Papen. H. a to dia, describes. Stephens

Quincy, Fildes piston engine, Patent issued

July 13. Application filed June 9. Latent claim

to have been filed over 1 year ago.

Mercury pumps at Lamp Factory run out.

gives at some joints loaded badly. R.R.

Would not start the Lamp Glass Museum.

242,

Church to work on divine subjects instead

on rails. Born 135 fig 654c. Area

Aug 3. Arrived at 15 days.

Herbert. comparative anatomy, 1860

✓₂ It took heat went from 8 to 11 Celsius

Book No. 112 pgs. 213.

11. 2. 1924

Friday Aug. 6.

H. de la Cruz Meléndez, Comodoro Puerto

[illegible]

Notes on Learning Curve and the Fifth rule same
By Sm. B. Bib 106: p. 554c

1. The first of these is the fact that the

1. The first part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a cursive script, and the addresses are listed below them. The list includes names such as "John A. Smith", "John B. Smith", "John C. Smith", "John D. Smith", "John E. Smith", "John F. Smith", "John G. Smith", "John H. Smith", "John I. Smith", "John J. Smith", "John K. Smith", "John L. Smith", "John M. Smith", "John N. Smith", "John O. Smith", "John P. Smith", "John Q. Smith", "John R. Smith", "John S. Smith", "John T. Smith", "John U. Smith", "John V. Smith", "John W. Smith", "John X. Smith", "John Y. Smith", and "John Z. Smith".

[illegible]

1. 10. 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2

11. The following are the names of the persons who have been appointed to the various committees of the Board of Directors:

12. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ 1

... ..

1870

[illegible]

My dear friend, I have just received your letter of the 10th inst. and am glad to hear from you.

(year in the 50's) has been

1. The first part of the document is a list of names and their corresponding numbers, arranged in two columns. The names are written in a cursive script, and the numbers are written in a simple, bold font. The names are:

- 1. The first part of the document is a list of names and their corresponding numbers, arranged in two columns. The names are written in a cursive script, and the numbers are written in a simple, bold font. The names are:

Friction Roller for transmission of

Power designed & sketched by Horvitz

Br 16. No 101 69c 11 pc

1917

Amelia Webb, Boston, & New York.

Albany, N.Y. - 1880

Albany, N.Y. last on short visit,

Saturday Aug. 7

Examined the ~~laminated~~ magnet
taken out and returned.

Visual Indicator, brought (another)
Lamp set up by Mr. Hingey

Micrograph receiver tried, worked well
Some noise & distortion in the
middle.

Work General of work. Ideas drawing
coal dust from ten cases of paper
laying on switch. Alt. demodulating
and putting screw gear in the
receiver. Ideas on "Clamp" from use of
Morse for dressing sanders. Mrs.
Baldwin on carbonizing and
apparatus for getting down from
Mr. Walter. See most of the work
getting up specifications. More up on
Lamp's history and coal dressing
for coal saving.

Sunday 8 Aug.

After dinner and thoroughly clean &
to. Mary under function of the 10th who
for also here, will arrange for lunch
coal exp. before firing up again.

Carbonizing. Mr. Satchers describes the
apparatus for - carbon - gases & carbon
firing to discuss cause and remedy for
cleaning over of the large. 10th 10th 10th

Monday Aug. 9.

Up 2. 10th & 10th 10th. Morning
cleaning up. Latches & valves moved.
Little bit of work beginning the 10th 10th
from the 10th.

Carbonizing. Mr. carbonizing. Ideas
found at Laboratory. Reason & 10th 10th
setting up little & 10th 10th at Lamp 10th

Locomotive Logan at work. Setting
up on the locomotive.

Stationary. Mr. Eng. Hingey. Making drawings
of the 10th 10th. Same action as the 10th
10th 10th to the 10th.

Stephen Cae. Burman made the dis-
position suggested here some days ago, in
the Cae and complete telephone sent
here and lately by Mr. Upton, under O.K.

Absent Mr. E. in N.Y. all day. Write in
New South, all day.

Dear Sir, for making working model
for case for the Port District, in the
system. In the case, one day
desider.

Planning in Mr. Balthazar's suggestions
did not solve the problem involved in the
course of the lake to any great extent.
A thorough discussion to further elaborate
suggested to be one to the one side. Many
questions of James being given ground
towards the other side. James's move on
his, and as for the thing, I couldn't
even later to be arranged to look the
other way. Now the water now changes
some on inside or outside of lake. Ok.

Friday Aug 13

Friday Aug 13
Walter Andrews, changing all the
friends to hold the mass up for
celebrating.

Wells, Mr. E. C. 1871. 1872. 1873. 1874. 1875. 1876. 1877. 1878. 1879. 1880. 1881. 1882. 1883. 1884. 1885. 1886. 1887. 1888. 1889. 1890. 1891. 1892. 1893. 1894. 1895. 1896. 1897. 1898. 1899. 1900. 1901. 1902. 1903. 1904. 1905. 1906. 1907. 1908. 1909. 1910. 1911. 1912. 1913. 1914. 1915. 1916. 1917. 1918. 1919. 1920. 1921. 1922. 1923. 1924. 1925. 1926. 1927. 1928. 1929. 1930. 1931. 1932. 1933. 1934. 1935. 1936. 1937. 1938. 1939. 1940. 1941. 1942. 1943. 1944. 1945. 1946. 1947. 1948. 1949. 1950. 1951. 1952. 1953. 1954. 1955. 1956. 1957. 1958. 1959. 1960. 1961. 1962. 1963. 1964. 1965. 1966. 1967. 1968. 1969. 1970. 1971. 1972. 1973. 1974. 1975. 1976. 1977. 1978. 1979. 1980. 1981. 1982. 1983. 1984. 1985. 1986. 1987. 1988. 1989. 1990. 1991. 1992. 1993. 1994. 1995. 1996. 1997. 1998. 1999. 2000. 2001. 2002. 2003. 2004. 2005. 2006. 2007. 2008. 2009. 2010. 2011. 2012. 2013. 2014. 2015. 2016. 2017. 2018. 2019. 2020. 2021. 2022. 2023. 2024. 2025. 2026. 2027. 2028. 2029. 2030. 2031. 2032. 2033. 2034. 2035. 2036. 2037. 2038. 2039. 2040. 2041. 2042. 2043. 2044. 2045. 2046. 2047. 2048. 2049. 2050. 2051. 2052. 2053. 2054. 2055. 2056. 2057. 2058. 2059. 2060. 2061. 2062. 2063. 2064. 2065. 2066. 2067. 2068. 2069. 2070. 2071. 2072. 2073. 2074. 2075. 2076. 2077. 2078. 2079. 2080. 2081. 2082. 2083. 2084. 2085. 2086. 2087. 2088. 2089. 2090. 2091. 2092. 2093. 2094. 2095. 2096. 2097. 2098. 2099. 2100. 2101. 2102. 2103. 2104. 2105. 2106. 2107. 2108. 2109. 2110. 2111. 2112. 2113. 2114. 2115. 2116. 2117. 2118. 2119. 2120. 2121. 2122. 2123. 2124. 2125. 2126. 2127. 2128. 2129. 2130. 2131. 2132. 2133. 2134. 2135. 2136. 2137. 2138. 2139. 2140. 2141. 2142. 2143. 2144. 2145. 2146. 2147. 2148. 2149. 2150. 2151. 2152. 2153. 2154. 2155. 2156. 2157. 2158. 2159. 2160. 2161. 2162. 2163. 2164. 2165. 2166. 2167. 2168. 2169. 2170. 2171. 2172. 2173. 2174. 2175. 2176. 2177. 2178. 2179. 2180. 2181. 2182. 2183. 2184. 2185. 2186. 2187. 2188. 2189. 2190. 2191. 2192. 2193. 2194. 2195. 2196. 2197. 2198. 2199. 2200. 2201. 2202. 2203. 2204. 2205. 2206. 2207. 2208. 2209. 2210. 2211. 2212. 2213. 2214. 2215. 2216. 2217. 2218. 2219. 2220. 2221. 2222. 2223. 2224. 2225. 2226. 2227. 2228. 2229. 2230. 2231. 2232. 2233. 2234. 2235. 2236. 2237. 2238. 2239. 2240. 2241. 2242. 2243. 2244. 2245. 2246. 2247. 2248. 2249. 2250. 2251. 2252. 2253. 2254. 2255. 2256. 2257. 2258. 2259. 2260. 2261. 2262. 2263. 2264. 2265. 2266. 2267. 2268. 2269. 2270. 2271. 2272. 2273. 2274. 2275. 2276. 2277. 2278. 2279. 2280. 2281. 2282. 2283. 2284. 2285. 2286. 2287. 2288. 2289. 2290. 2291. 2292. 2293. 2294. 2295. 2296. 2297. 2298. 2299. 2300. 2301. 2302. 2303. 2304. 2305. 2306. 2307. 2308. 2309. 2310. 2311. 2312. 2313. 2314. 2315. 2316. 2317. 2318. 2319. 2320. 2321. 2322. 2323. 2324. 2325. 2326. 2327. 2328. 2329. 2330. 2331. 2332. 2333. 2334. 2335. 2336. 2337. 2338. 2339. 2340. 2341. 2342. 2343. 2344. 2345. 2346. 2347. 2348. 2349. 2350. 2351. 2352. 2353. 2354. 2355. 2356. 2357. 2358. 2359. 2360. 2361. 2362. 2363. 2364. 2365. 2366. 2367. 2368. 2369. 2370. 2371. 2372. 2373. 2374. 2375. 2376. 2377. 2378. 2379. 2380. 2381. 2382. 2383. 2384. 2385. 2386. 2387. 2388. 2389. 2390. 2391. 2392. 2393. 2394. 2395. 2396. 2397. 2398. 2399. 2400. 2401. 2402. 2403. 2404. 2405. 2406. 2407. 2408. 2409. 2410. 2411. 2412. 2413. 2414. 2415. 2416. 2417. 2418. 2419. 2420. 2421. 2422. 2423. 2424. 2425. 2426. 2427. 2428. 2429. 2430. 2431. 2432. 2433. 2434. 2435. 2436. 2437. 2438. 2439. 2440. 2441. 2442. 2443. 2444. 2445. 2446. 2447. 2448. 2449. 2450. 2451. 2452. 2453. 2454. 2455. 2456. 2457. 2458. 2459. 2460. 2461. 2462. 2463. 2464. 2465. 2466. 2467. 2468. 2469. 2470. 2471. 2472. 2473. 2474. 2475. 2476. 2477. 2478. 2479. 2480. 2481. 2482. 2483. 2484. 2485. 2486. 2487. 2488. 2489. 2490. 2491. 2492. 2493. 2494. 2495. 2496. 2497. 2498. 2499. 2500. 2501. 2502. 2503. 2504. 2505. 2506. 2507. 2508. 2509. 2510. 2511. 2512. 2513. 2514. 2515. 2516. 2517. 2518. 2519. 2520. 2521. 2522. 2523. 2524. 2525. 2526. 2527. 2528. 2529. 2530. 2531. 2532. 2533. 2534. 2535. 2536. 2537. 2538. 2539. 2540. 2541. 2542. 2543. 2544. 2545. 2546. 2547. 2548. 2549. 2550. 2551

Alvin Moll at New Brunswick, N. J.
and finished up work related to
vol. 136 by 1892.

Saturday, Aug. 14

Patents; Art. 17, Sec. 1, and
the Specification of Electric Rail Road.
Application for patent in Canada.

Pygmaea P. var. sent to Lordstridge is
older than the pygmaea sent
with me but instead of white of lice
and bands is black and brown, very
resembling the Pygmaea we found in
the Caribbean Narrow and wide

Black comes Mr. Salomon. Making
experiments to determine cause and
effect of the present long carbon
from burning gas. This is the first
of the first experiments. Being the
first experiment with coal dust. The
first is testing the blow and gas
supply in the factory. Then the
blow and gas supply in the factory.
Testing the blow and gas supply in
the factory. Then the blow and gas
supply in the factory. Then the blow
and gas supply in the factory. Then
the blow and gas supply in the factory.

Monday Aug 15
Miles. Mr. & Mrs. Salomon. Making
experiments with various light. The
table for the first drawings to the main

Monday Aug 16
Factory. Blowing the first eight feet
of the first blowing bamboo to.

Coal dust. Still burning on dust. Coal
dust in experiments in burning & testing.

First in vacuum. Mr. Salomon. Making
experiments with various light. The
table for the first drawings to the main

Coal dust. Still burning on dust. Coal
dust in experiments in burning & testing.

First in vacuum. Mr. Salomon. Making
experiments with various light. The
table for the first drawings to the main

Tuesday Aug 17
Mr. Salomon. Making
experiments with various light. The
table for the first drawings to the main

First in vacuum. Mr. Salomon. Making
experiments with various light. The
table for the first drawings to the main

Madras. First examination in Saint Peter's
Yard by Van Giver & Co. 11th of 12
Machin & Wind. 1st. 1st.

Some tests, such as Minutes of Lamp
from 1000 to 1000. Some tests, but
at 32 candles in 1000. To be
free of spots. Lamp in 1000. To be
norm of the lamp. Some tests, but
200. Some tests for vacuum, and found
best in 1000 with 1000. Some tests, but
entire when the glass is 1000. To be
in 1000. To be.

Bamboo Exp. 1000. Some tests, but
1000. Some tests, but
in 1000. To be.

Visitors. For of 1000. To be.

Wednesday Aug 18

Received, two boxes glass from 1000.
1000. To be.

1000. To be.

Bamboo case not to be 1000.
1000. To be.

Received, 1000. To be.

1000. To be.

1000. To be.

Thursday Aug 19. 80.
Clear, warm, calm. 1.000 ft.
Spent forenoon in the
at work by Holmes in factory.

Admission, leaving the our light
-roads of supplying our Simplicity.
Expense over this morning, No estimate
Examination would, reveal the point in

*Blue Bird no. 1078 mated by Jathura
Kane made by feeding some grain
tube as bonding Lapping & c. per.*

Test Lamp with carbon 5 1/4 10.66 c.
Resist 210 ohms 5 1/4 per h.p. at 82 c.
188 ohms Resist 5 1/4 per h.p. 80 c.

Friday Aug 20.
Immature, *Grapha armata*,
flourished out in same manner
as the one is particularly.

George Washington, some of the castings
 French and English printing press &
 some common in getting it ready.
 Little known & new in

and for up him and down to have
old out for a good if we can
my gradually. When I think the
better of the world and the world

Put in seed in for growing.

Saturday Aug. 21. 80.

Excursion, from San to San Juan
Grand Canyon. Arrived in Ship
around 10:00. Some very nice views.

At San Juan, we saw the Esplanade
given by T. Davis, by the ship. Some
work on the river. The river
is a beautiful view.

At San Juan, we saw the Esplanade
given by T. Davis, by the ship. Some
work on the river. The river
is a beautiful view. At San Juan,
we saw the Esplanade given by T. Davis,
by the ship. Some work on the river.
The river is a beautiful view. At San Juan,
we saw the Esplanade given by T. Davis,
by the ship. Some work on the river.
The river is a beautiful view.

At San Juan, we saw the Esplanade
given by T. Davis, by the ship. Some
work on the river. The river is a beautiful view.

Monday Aug. 22.

At San Juan, we saw the Esplanade
given by T. Davis, by the ship. Some
work on the river. The river is a beautiful view.

At San Juan, we saw the Esplanade
given by T. Davis, by the ship. Some
work on the river. The river is a beautiful view.

At San Juan, we saw the Esplanade
given by T. Davis, by the ship. Some
work on the river. The river is a beautiful view.

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work on the river. The river is a beautiful view.

At San Juan, we saw the Esplanade
given by T. Davis, by the ship. Some
work on the river. The river is a beautiful view.

At San Juan, we saw the Esplanade
given by T. Davis, by the ship. Some
work on the river. The river is a beautiful view.

Tuesday Aug 24 1880

Camp. Backus made jump of single foot
between gauges.

Backus test, new being used and seems
to perform very well.

Shoemaker & Piles, and at camp, looking
and new getting up same amount
from Murray pump.

Gravel vacuum. Pump is working, but
the 2nd. looking for one of the
same size as the 1st. Gravel.

Visited Mr. H. H. H.

Shot crabs, the ones having to
the ear was lost.

Wednesday Aug 25

Backus pump, at 5:00 AM, started,

vacuuming, but in 10 min. later out
improved the result.

Milling. Machine some settling up
and washer disintegrated.

Visited Backus, at 10:00 AM.

Backus was given 100 lbs. 30.00
vacuum, on 10.00, 10.00, 10.00
vacuum.

Camp record, dengue and malaria
by Mr. Backus, Cost No. 100, 100, 100.

Thursday Aug 26

Combination Gas Machine from Detroit
Municipal med. at Camp Factory.

Pumps Hill and pump were
cleaning the ^{into gas meter} ~~vacuum~~ ^{preparation}
to starting pumps at Factory.

Broken clamps. new clamps made and
stud.

Star blinding, Bochner with his
Kates 40. moved to work up water
in Camp Factory.

Building Mr. Edson skeleton plan
for building 36x26 supplement
to factory.

Friday Aug 27.

Wagon. Hauled engine from Lager Higgs in
reply to Lammie of a new one.

Refrigerating engine arrived and
checked by Mr. Bauman Rm 112 p. 127.

Went after new pump to factory.
John Foster. Stacked slabs
water in house of. Hauled out one
kind of plume stone etc.

Went to factory. Experimented on
mounting motor on special machine
the, paraffin etc. and gave for

Electric Motor, started in 11:30
discovering some use in. Also in house
in determining the electric motor
uses and in carrying the same
in different positions. Starting pump
station in E. side of road. Started
marked for motor, center. Not yet
then to determine the position of
own assembly.

Saturday Aug 28

Galvanized, kept it up. The up.
x the end. Some of the up.
building.

Patent-coppy finished some up.
x 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 841. 842. 843. 844. 845. 846. 847. 848. 849. 850. 851. 852. 853. 854. 855. 856. 857. 858. 859. 860. 861. 862. 863. 864. 865. 866. 867. 868. 869. 870. 871. 872. 873. 874. 875. 876. 877. 878. 879. 880. 881. 882. 883. 884. 885. 886. 887. 888. 889. 890. 891. 892. 893. 894. 895. 896. 897. 898. 899. 900. 901. 902. 903. 904. 905. 906. 907. 908. 909. 910. 911. 912. 913. 914. 915. 916. 917. 918. 919. 920. 921. 922. 923. 924. 925. 926. 927. 928. 929. 930. 931. 932. 933. 934. 935. 936. 937. 938. 939. 940. 941. 942. 943. 944. 945. 946. 947. 948. 949. 950. 951. 952. 953. 954. 955. 956. 957. 958. 959. 960. 961. 962. 963. 964. 965. 966. 967. 968. 969. 970. 971. 972. 973. 974. 975. 976. 977. 978. 979. 980. 981. 982. 983. 984. 985. 986. 987. 988. 989. 990. 991. 992. 993. 994. 995. 996. 997. 998. 999. 1000.

Construction. Men and boys did some
finished building with the machine
having two sections in
finishing part of the line

Men and boys did some
and, working on Grand Machine
and Grand Machine. The
foundations of 2 of them. The
Harrison on the Grand Machine
of 2 of conductors. The
N.B. Clark on the Grand Machine
for large machines. The
to improve the foundation. The
elastic conductors. The
conductor in, conduct

Sunday Aug 31.80

Men and boys did some
the Grand Machine. The
the Grand Machine. The

Foundation. Men digging the foundation
on New Supple. The machine with
the Grand Machine. The

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Wednesday Sept. 1. 80.

Spent the morning and afternoon
examining the station, which was
of the 1st class. The station
in station, part of the day and night.

Visited the two public buildings
of the Marine Corps of the
Yale of the 1st class. The station
by the 1st class. The station
and the 1st class of the station.

Visited the two public buildings
of the Marine Corps of the
Yale of the 1st class. The station
and the 1st class of the station.

Thursday Sept. 2.

Spent the morning and afternoon
examining the station, which was
of the 1st class. The station
in station, part of the day and night.

Visited the two public buildings
of the Marine Corps of the
Yale of the 1st class. The station
and the 1st class of the station.

Visited the two public buildings
of the Marine Corps of the
Yale of the 1st class. The station
and the 1st class of the station.

Friday Sept. 22-80

Maroon pump, 1st Lamp & 2nd Lamp
Remaining in the cellar

Sold the pump to the same person
plus the pump by the same person
indicate of the same as before

Condenser, 1st Lamp, 1st Lamp, 1st Lamp
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Saturday Sept. 23

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Monday Sept. 6.

Monday Sept. 6. - Quincy
Missus Big, Roubalier, Col. Carter

Synonym: Lotion to Society of Friends
 1811. 1812. 1813. 1814. 1815. 1816. 1817. 1818. 1819. 1820. 1821. 1822. 1823. 1824. 1825. 1826. 1827. 1828. 1829. 1830. 1831. 1832. 1833. 1834. 1835. 1836. 1837. 1838. 1839. 1840. 1841. 1842. 1843. 1844. 1845. 1846. 1847. 1848. 1849. 1850. 1851. 1852. 1853. 1854. 1855. 1856. 1857. 1858. 1859. 1860. 1861. 1862. 1863. 1864. 1865. 1866. 1867. 1868. 1869. 1870. 1871. 1872. 1873. 1874. 1875. 1876. 1877. 1878. 1879. 1880. 1881. 1882. 1883. 1884. 1885. 1886. 1887. 1888. 1889. 1890. 1891. 1892. 1893. 1894. 1895. 1896. 1897. 1898. 1899. 1900. 1901. 1902. 1903. 1904. 1905. 1906. 1907. 1908. 1909. 1910. 1911. 1912. 1913. 1914. 1915. 1916. 1917. 1918. 1919. 1920. 1921. 1922. 1923. 1924. 1925. 1926. 1927. 1928. 1929. 1930. 1931. 1932. 1933. 1934. 1935. 1936. 1937. 1938. 1939. 1940. 1941. 1942. 1943. 1944. 1945. 1946. 1947. 1948. 1949. 1950. 1951. 1952. 1953. 1954. 1955. 1956. 1957. 1958. 1959. 1960. 1961. 1962. 1963. 1964. 1965. 1966. 1967. 1968. 1969. 1970. 1971. 1972. 1973. 1974. 1975. 1976. 1977. 1978. 1979. 1980. 1981. 1982. 1983. 1984. 1985. 1986. 1987. 1988. 1989. 1990. 1991. 1992. 1993. 1994. 1995. 1996. 1997. 1998. 1999. 2000. 2001. 2002. 2003. 2004. 2005. 2006. 2007. 2008. 2009. 2010. 2011. 2012. 2013. 2014. 2015. 2016. 2017. 2018. 2019. 2020. 2021. 2022. 2023. 2024. 2025. 2026. 2027. 2028. 2029. 2030. 2031. 2032. 2033. 2034. 2035. 2036. 2037. 2038. 2039. 2040. 2041. 2042. 2043. 2044. 2045. 2046. 2047. 2048. 2049. 2050. 2051. 2052. 2053. 2054. 2055. 2056. 2057. 2058. 2059. 2060. 2061. 2062. 2063. 2064. 2065. 2066. 2067. 2068. 2069. 2070. 2071. 2072. 2073. 2074. 2075. 2076. 2077. 2078. 2079. 2080. 2081. 2082. 2083. 2084. 2085. 2086. 2087. 2088. 2089. 2090. 2091. 2092. 2093. 2094. 2095. 2096. 2097. 2098. 2099. 2100. 2101. 2102. 2103. 2104. 2105. 2106. 2107. 2108. 2109. 2110. 2111. 2112. 2113. 2114. 2115. 2116. 2117. 2118. 2119. 2120. 2121. 2122. 2123. 2124. 2125. 2126. 2127. 2128. 2129. 2130. 2131. 2132. 2133. 2134. 2135. 2136. 2137. 2138. 2139. 2140. 2141. 2142. 2143. 2144. 2145. 2146. 2147. 2148. 2149. 2150. 2151. 2152. 2153. 2154. 2155. 2156. 2157. 2158. 2159. 2160. 2161. 2162. 2163. 2164. 2165. 2166. 2167. 2168. 2169. 2170. 2171. 2172. 2173. 2174. 2175. 2176. 2177. 2178. 2179. 2180. 2181. 2182. 2183. 2184. 2185. 2186. 2187. 2188. 2189. 2190. 2191. 2192. 2193. 2194. 2195. 2196. 2197. 2198. 2199. 2200. 2201. 2202. 2203. 2204. 2205. 2206. 2207. 2208. 2209. 2210. 2211. 2212. 2213. 2214. 2215. 2216. 2217. 2218. 2219. 2220. 2221. 2222. 2223. 2224. 2225. 2226. 2227. 2228. 2229. 2230. 2231. 2232. 2233. 2234. 2235. 2236. 2237. 2238. 2239. 2240. 2241. 2242. 2243. 2244. 2245. 2246. 2247. 2248. 2249. 2250. 2251. 2252. 2253. 2254. 2255. 2256. 2257. 2258. 2259. 2260. 2261. 2262. 2263. 2264. 2265. 2266. 2267. 2268. 2269. 2270. 2271. 2272. 2273. 2274. 2275. 2276. 2277. 2278. 2279. 2280. 2281. 2282. 2283. 2284. 2285. 2286. 2287. 2288. 2289. 2290. 2291. 2292. 2293. 2294. 2295. 2296. 2297. 2298. 2299. 2300. 2301. 2302. 2303. 2304. 2305. 2306. 2307. 2308. 2309. 2310. 2311. 2312. 2313. 2314. 2315. 2316. 2317. 2318. 2319. 2320. 2321. 2322. 2323. 2324. 2325. 2326. 2327. 2328. 2329. 2330. 2331. 2332. 2333. 2334. 2335. 2336. 2337. 2338. 2339. 2340. 2341. 2342. 2343. 2344. 2345. 2346. 2347. 2348. 2349. 2350. 2351. 2352. 2353. 2354. 2355. 2356. 2357. 2358. 2359. 2360. 2361. 2362. 2363. 2364. 2365. 2366. 2367. 2368. 2369. 2370. 2371. 2372. 2373. 2374. 2375. 2376. 2377. 2378. 2379. 2380. 2381. 2382. 2383. 2384. 2385. 2386. 2387. 2388. 2389. 2390. 2391. 2392. 2393. 2394. 2395. 2396. 2397. 2398. 2399. 2400. 2401. 2402. 2403. 2404. 2405. 2406. 2407. 2408. 2409. 2410. 2411. 2412. 2413. 2414. 2415. 2416. 2417. 2418. 2419. 2420. 2421. 2422. 2423. 2424. 2425. 2426. 2427. 2428. 2429. 2430. 2431. 2432. 2433. 2434. 2435. 2436. 2437. 2438. 2439. 2440. 2441. 2442. 2443. 2444. 2445. 2446. 2447. 2448. 2449. 2450. 2451. 2452. 2453. 2454. 2455. 2456. 2457. 2458. 2459. 2460. 2461. 2462. 2463. 2464. 2465. 2466. 2467. 2468. 2469. 2470. 2471. 2472. 2473. 2474. 2475. 2476. 2477. 2478. 2479. 2480. 2481. 2482. 2483. 2484. 2485. 2486. 2487. 2488. 2489. 2

Dear Friends, I am writing you
from the land of the living. I am
in all your hearts and in all your
souls.

Wienza holding standing in
x and holding for Leasing Monney
by Andrews

Call for them are made direct
from which he is now making orders
for another.

Spore Another consignment of the
Spore and from Singapore, 1860.

Thursday Sept. 7.

Conductor, G. L. Jones, Comm. Sta.
with Pastor.

Factory of the, Panama Canal
 1894-1895, 1896-1897, 1898-1899, 1900-1901, 1902-1903, 1904-1905, 1906-1907, 1908-1909, 1910-1911, 1912-1913, 1914-1915, 1916-1917, 1918-1919, 1920-1921, 1922-1923, 1924-1925, 1926-1927, 1928-1929, 1930-1931, 1932-1933, 1934-1935, 1936-1937, 1938-1939, 1940-1941, 1942-1943, 1944-1945, 1946-1947, 1948-1949, 1950-1951, 1952-1953, 1954-1955, 1956-1957, 1958-1959, 1960-1961, 1962-1963, 1964-1965, 1966-1967, 1968-1969, 1970-1971, 1972-1973, 1974-1975, 1976-1977, 1978-1979, 1980-1981, 1982-1983, 1984-1985, 1986-1987, 1988-1989, 1990-1991, 1992-1993, 1994-1995, 1996-1997, 1998-1999, 2000-2001, 2002-2003, 2004-2005, 2006-2007, 2008-2009, 2010-2011, 2012-2013, 2014-2015, 2016-2017, 2018-2019, 2020-2021, 2022-2023, 2024-2025, 2026-2027, 2028-2029, 2030-2031, 2032-2033, 2034-2035, 2036-2037, 2038-2039, 2040-2041, 2042-2043, 2044-2045, 2046-2047, 2048-2049, 2050-2051, 2052-2053, 2054-2055, 2056-2057, 2058-2059, 2060-2061, 2062-2063, 2064-2065, 2066-2067, 2068-2069, 2070-2071, 2072-2073, 2074-2075, 2076-2077, 2078-2079, 2080-2081, 2082-2083, 2084-2085, 2086-2087, 2088-2089, 2090-2091, 2092-2093, 2094-2095, 2096-2097, 2098-2099, 2100-2101, 2102-2103, 2104-2105, 2106-2107, 2108-2109, 2110-2111, 2112-2113, 2114-2115, 2116-2117, 2118-2119, 2120-2121, 2122-2123, 2124-2125, 2126-2127, 2128-2129, 2130-2131, 2132-2133, 2134-2135, 2136-2137, 2138-2139, 2140-2141, 2142-2143, 2144-2145, 2146-2147, 2148-2149, 2150-2151, 2152-2153, 2154-2155, 2156-2157, 2158-2159, 2160-2161, 2162-2163, 2164-2165, 2166-2167, 2168-2169, 2170-2171, 2172-2173, 2174-2175, 2176-2177, 2178-2179, 2180-2181, 2182-2183, 2184-2185, 2186-2187, 2188-2189, 2190-2191, 2192-2193, 2194-2195, 2196-2197, 2198-2199, 2200-2201, 2202-2203, 2204-2205, 2206-2207, 2208-2209, 2210-2211, 2212-2213, 2214-2215, 2216-2217, 2218-2219, 2220-2221, 2222-2223, 2224-2225, 2226-2227, 2228-2229, 2230-2231, 2232-2233, 2234-2235, 2236-2237, 2238-2239, 2240-2241, 2242-2243, 2244-2245, 2246-2247, 2248-2249, 2250-2251, 2252-2253, 2254-2255, 2256-2257, 2258-2259, 2260-2261, 2262-2263, 2264-2265, 2266-2267, 2268-2269, 2270-2271, 2272-2273, 2274-2275, 2276-2277, 2278-2279, 2280-2281, 2282-2283, 2284-2285, 2286-2287, 2288-2289, 2290-2291, 2292-2293, 2294-2295, 2296-2297, 2298-2299, 2300-2301, 2302-2303, 2304-2305, 2306-2307, 2308-2309, 2310-2311, 2312-2313, 2314-2315, 2316-2317, 2318-2319, 2320-2321, 2322-2323, 2324-2325, 2326-2327, 2328-2329, 2330-2331, 2332-2333, 2334-2335, 2336-2337, 2338-2339, 2340-2341, 2342-2343, 2344-2345, 2346-2347, 2348-2349, 2350-2351, 2352-2353, 2354-2355, 2356-2357, 2358-2359, 2360-2361, 2362-2363, 2364-2365, 2366-2367, 2368-2369, 2370-2371, 2372-2373, 2374-2375, 2376-2377, 2378-2379, 2380-2381, 2382-2383, 2384-2385, 2386-2387, 2388-2389, 2390-2391, 2392-2393, 2394-2395, 2396-2397, 2398-2399, 2400-2401, 2402-2403, 2404-2405, 2406-2407, 2408-2409, 2410-2411, 2412-2413, 2414-2415, 2416-2417, 2418-2419, 2420-2421, 2422-2423, 2424-2425, 2426-2427, 2428-2429, 2430-2431, 2432-2433, 2434-2435, 2436-2437, 2438-2439, 2440-2441, 2442-2443, 2444-2445, 2446-2447, 2448-2449, 2450-2451, 2452-2453, 2454-2455, 2456-2457, 2458-2459, 2460-2461, 2462-2463, 2464-2465, 2466-2467, 2468-2469, 2470-2471, 2472-2473, 2474-2475, 2476-2477, 2478-2479, 2480-2481, 2482-2483, 2484-2485, 2486-2487, 2488-2489, 2490-2491, 2492-2493, 2494-2495, 2496-2497, 2498-2499, 2500-2501, 2502-2503, 2504-2505, 2506-2507, 2508-2509, 2510-2511, 2512-2513, 2514-2515, 2516-2517, 2518-2519, 2520-2521, 2522-2523, 2524-2525, 2526-2527, 2528-2529, 2530-2531, 2532-2533, 2534-2535, 2536-2537, 2538-2539, 2540-2541, 2542-2543, 2544-2545, 2546-2547, 2548-2549, 2550-2551, 2552-2553, 2554-2555, 2556-2557, 2558-2559, 2560-2561, 2562-2563, 2564-2565, 2566-2567, 2568-2569, 2570-2571, 2572-2573, 2574-2575, 2576-2577, 2578-2579, 2580-2581, 2582-2583, 2584-2585, 2586-2587, 2588-2589, 2590-2591, 2592-2593, 2594-2595, 2596-2597, 2598-2599, 2600-2601, 2602-2603, 2604-2605, 2606-2607, 2608-2609, 2610-2611, 2612-2613, 2614-2615, 2616-2617, 2618-2619, 2620-2621, 2622-2623, 2624-2625, 2626-2627, 2628-2629, 2630-2631, 2632-2633, 2634-2635, 26

A. longifolia Bartram was introduced by
Andrews set up & bred by Clark in
Cockle Bay, Nidaly.

Reize dynam. soll von fangs an ab-

Inside the house together the
work of making such outlying life.

Friday Sept 10

Factory, heavy beams secured to the roof on which to attach hoisting apparatus.

Pump Motor, working very satisfactory. The pump chain caught several times necessitating stopping and moving back a little to disengage. Tested 35 carbons got 27 good ones.

Widens. Report of Smith did not get from factory.

Forster, Johnson procured gas. Chandler left absolutely with electric fixtures and experiment on different means of arranging them.

Patent. Adams copy, English No 15.
* on dynamo for current motor

Saturday Sept 11

Edison. Smith. Under Edison with employing his men and accomplishing nothing.

Factory, pump later open to make casting of the chain. This arrangement by hole filled with brass and heated with necessity taking out and resetting. The iron handle put over furnace to conduct away gas heat.

Gauge dynamo. Casting for base and cover.

Drawings. Mott finished Pat. office drawings of dynamo machine drawn by Rowland, one small one of which was left here by him as his last visit.

Work. General. Smith on call. Types, a number of the Max. on an. Draw for lamp machine and for culture, Mr. Baetzler, making effort to get. Factory started, E. E. Nathan on call. Martin commands etc.

Monday Sept 13.

Large planer. Rordines made
Xathura at shop to day.

Cover pump. refilled w. w day past
shop and set satisfactorily working
to day.

The Warling Machine made by Tins
paid to day, but did not work.
Xup to expectations. Mrs. Eaton
sketched another design on card.
-since she sent No 16 page 7

Agent Mr. Clarke in Philada
to note progress of Phil. Coll. Aug.

Tuesday Sept 14.

White planer. made copy of English m.
system to maintain Electric Motor press and
commenced copy of

Early the Machine taken out to clear pit
and reset. Pump again packing and
the letters into large container bearing
my missing face.

For the little Englishman making the sketch
of Johnson Book 13 page 18 de.

Miller Maj Eaton

Saturday Sept. 18.

Made general part. work. Experimented.
Continued in insulating materials.
Mr. Baitsikov at work at Power
Pump at Factory, commenced for night
making it work reliable. Milled
Lat work on Station Conductions.
Smiths commenced in wooden fac-
simile of large American connec-
tions to commutator. Logan on
castings of large flywheels. Dean
and assistants on blamp Meters
and fiber furnace.

Gas data. Russell brought in one
of Gas & Power data of 4 kinds.

Pat. Drawing Mito drawing drawing of
Palmer meter. Francis making one
to top. mit.

Conductors, Mito insulating lamp
fence, with preparation made on
cable noted Friday.

Wednesday 22-80

Absent. Mito absent since Saturday
last. Last night, heard that
Mr. Khene was in Pineda pushing
to order and see about power. Not
seen pump. Mr. Clarke also
in New York to see rotating high
speed engine on exhibit at
American Institute fair.

Mr. Bower. Read during my absence
a portable. Miller Kettle and more
on boiling the lace etc.

Picture, also read during my
absence a lot of chemicals &
all color & globes, for experiment
so, wrote lamps.

Mr. Pumper. Long, thin, put in bottom
pipes, extending nearly up to pump
place of short nipples from
middle.

Station, commenced work on small
pump addition for bed of large
cable.

Miles No. 114 $\frac{1}{12}$		
Fire Test	137	✓
Class. Elec. Gas. motive. Whistle Head Light	✓	✓
W. ...	113	✓
... ..	122	✓
... ..	123	✓
... ..	116	✓
... ..	57, 102, 105	✓
... ..	167	✓
... ..	159	✓
... ..	129, 165	✓
... ..	151	✓
... ..	100, 137	✓
... ..	153	✓

Mott Journal #5 [PN-80-09-23]

This is the fifth of six pocket notebooks used by Charles P. Mott, a member of the office staff at Menlo Park, to record daily activities at the laboratory. The entries from these notebooks were used as the basis for more extensive entries recorded by Mott in Menlo Park Notebooks #53 and #117. This pocket notebook covers the period September 1880-January 1881. The front cover is labeled "154" and is inscribed "No. 5 Sept 23. 80. to Jan 16. 81. C. P. Mott." The pages are unnumbered. Approximately 100 pages have been used.

Thursday Sept. 23rd 80

Conductors. Men summer in a
again opening conductors. Lovers
X for. Huns. other publishing
muslin with canvas No. 7 for reading

Absent. Marcus Edison. Upton
Schl. went to N.Y. 8-2 I mean to
visit some day before.

Invention. Hearing conducting. Ego
X for a note for Kater for invention.

Little. Whiting of
Kend. Pond

Arm. Ted. Holder. Sketch made by
X Mrs. Huns. for large flower.

Friday Sept. 24th 80

Conductors. 15 men today on making
first lamp conductors. For changing into
Laboratory, some to outside of building.
About. Mrs. Edison. Upton. Francis
Kata. about middle of after noon.

Some pump. Seymour has and took down
Xing to make pattern for some pump.

Spiders. Received at Saturday am
Bessie for photograph work of E. Huns.



Saturday Sept. 25. 80

Campy. *Lea Hill* put in in Campy.
pt. factory this morning. pt. of 4000 ft.
eroded in glass on

Glass four boxes recd. at Lamp
Factory.

Glauk. Rekreie went to Paris!
with balloons for young people, and
from Moscow to St. Petersburg.

The 2nd Div. met at Lakeland, Fla.
 for reproducing work of the 1st
 and 2nd Div. in a different

Yukon, Am. & Pac. Co. Comm. & Trans.
Patent Office

Monday Sept 27, 80

Large Plumes during just a
few minutes before the birds under
the large Plumes and the new subjects
84

Manufactured Camps with the
X-100 27 ft 9 in 950 Camps
4 ft of 100 ft plain, cutting out now
at rate of 5-50 impeded fibres
per day.

Pygmy murreling, good all day, Nov. 18
 * Lampyris succinea fully scaled off.

Leather frames. Forty ⁵⁰scantling frames
shipped to Factory making much
noise. 5 flasks, and Mac clams!
Mac bug, can get not about 100
per day.

Tuesday Sept 28.

Combs at factory working
quietly again today, 2nd comb
no line meaning.

Continued in the factory waiting for
valence on the comb in relation to
the contradiction to determine the proper
disposition between contradiction & take
give but words and work leading
to take to be heard in meaning.
Book 106, page 382.

Finis. Bingham with Gladstone
at Grand old mind of Johnson, dead
X 100, 101, 102.

Wm. A. Bingham and Mr. Maitland
X 100 as such one except to 100.

X 100 cannot pass comb at same
time it is caused by the
X 100 being being at above machine

Office. Bingham changing position
in down stairs office for man with com.

Flat making. Bingham today showed me
a new idea in making the wires in
pinus like the small tubes through which
the wire pass is heated all over and
compressed against the wire forming a
longer seal.

Heat Exp. with copper base examined
case of accumulation of large deposits
produced by one of machines connected
X 100 motor, up to 240 Rev. running 30
minutes, no heat Book 106, page 382.
At 300 Rev. 7° increase in temp. the wire
300. At 76° temp of strips at close 88°

Wednesday Sept 29

Gas Electro on road on Saturday noon
 X the day is closed to traffic

Papers from today's election have been
 X the day has been organized in and
 the 1st. with 8 pages 2000. 2000
 the 1st. with 8 pages 2000. 2000

Gas Electro on road on Saturday noon
 X the day is closed to traffic

Gas Electro on road on Saturday noon
 X the day is closed to traffic

Gas Electro on road on Saturday noon
 X the day is closed to traffic

Gas Electro on road on Saturday noon
 X the day is closed to traffic

Thursday Sept 30 80

Gas Electro on road on Saturday noon
 X the day is closed to traffic

Gas Electro on road on Saturday noon
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 X the day is closed to traffic

Gas Electro on road on Saturday noon
 X the day is closed to traffic

Friday Oct. 1. 80

Putting some letters for acknowledgment
of preparation of constitution for his
committee, and for sufficient testimony
to bear of necessity.

W. J. Eaton

Visited at Factory for the day and
for large supply of furniture also later
a reporter.

Apple State Bureau received report
large plow.

Carton James, Deane sent to him
from set of work in early
addition to Carton James in
more.

Carton blamp, Anderson come
for a change in time for holding
at work on whole drawing carton

Saturday Oct. 2. 80

Paper "World" to day publishes an
article apologizing for delay in making
demonstration him, attributing it to
delay in getting Patent Agent.

At about 6:30 Mr. Baileys Johnson
went to New York at 6:30.

Went out home with child.

Work done at work. Shop at work
on Camp Dorman, Dean & Co. sent
on clamps for Banks and on Banks
machine, Painter finishing up
New drawing office. Factory turning
out given a number of lamps -
Francis testing them. W. J. Eaton
at work on Station condenser.
Mr. Baileys at Factory, Johnson
at work on chandeliers.

Wednesday Oct. 6

Chandeliers in Sunday School
put up chandeliers of pictures in
upper Laboratory.

Visited On Monday ^{in afternoon} Pullman
of the Pullman Co. came to see
about an electric motor for oper-
ating transverse table for cases.

Laichin, Japan. Mr. E. making pre-
parations in heating sections in
vapor of Mercuric.

Combination Gas, Machine joined
to day and supplying steady gas
for demands of the factory.

Pumps, Men would on night work
X number, most of them across 15 day.

Aug 6

Meta. Andrus, finished a care-
fully made balance. Meta. and
diameter to. Meters in Laboratory.

Visited Man hui offering lands
for lamp factory.

Minimization, about 100 lamps lot
for stairs in laboratory part of the
time at 11.30. 50. candles at 11.30
in morning about 2.00 left.

Engine, California left and
Al. Swanson put in charge
of Engine.

Thursday Oct. 7. 80

About Mr. News at Chicago.

Tap Box, Andrew finished pattern
for casting of tap box - box to be
made at semi of connecting device
with main.

Chandlers. Got the Frenchman
making a Chandler's basket after
design by Johnson. 25-155 pgs. 44.

Chandlers. Lin. back Editor's house to
Blind man getting sound and sound
letter 3300 pgs.

Insulating machine. Mr. Koring
drawing and making drawings
of machine for putting insulating
material in tubes after some are in.

Friday Oct. 8.

Patterson. Made another copy of
English Patent No. 115. subject
of feeding to main. equal
to 115. 11 pages.

Patterson. Blake is Editor's evidence
being taken. 15 day.

Miles. Ingotman has and has
the mechanical part of miles. 115. 115.
115. 115. 115. 115. 115.

Chandlers. What Free. putting
Chandlers & basket up. 115. 115. 115.

Lamps. A number of lamps sealed
with short time from fitting first with
and then glass to glass. 115. 115.
sent to Laboratory.

Saturday Oct. 9. 80

Interference Edison vs. Black evidence
continue here to day

Lawrence Mr. Puma brought 30 lamps
Killed with case

Went general factory here turning
out and Francis testing out and making
number of lamps, were progressing
fairly on large dynamo. Examined
assisted on lamp machine and
file cutter. Rang on insulating
steel conductors, leaded wire in wire
work of factory, sufficient building
Man Man, stand in China & Japan

Monday Oct. 11. 80

Visited Dr. McLaughlin

Conductors on other light line were
from station to station, to illustrate
case of conductors

Large Edison suggests a lamp
shape to be used in that shape from
class factory

Piping, receiver, rubber line,

Lamp. Preparation being made for
testing about 100 lamps to night

Testing in a new testing 22.100 factory
Lamp. B's 171 pgs

Tuesday Oct. 12 80

Shop carbontate equipment
work on hand engine shop
Mar old on 22 to 24 Feb

Lamps 78 lamps were started
at about 3 o'clock this morning
Box No. 171. 20 lb of 100 lb
the burning 3.30 am. 20 lb 100 lb

Pring glass, 3 in glass 2 x 3 ft
Need for printing apparatus and
man grinding down the edges

Commence. The casting for equipment
from which was and being turned
by Vignier for large cylinder

Wednesday Oct. 13 80

Production; Turnover finished photos
for Mr. Batters 5 lb. and at
Factory

Pump suddenly stopped with 22 lamps
for 22 lamps. Replaced a few lamps
destroyed all vacuum lost

Gas for the glass was machine
put on 100 lb. again today. And
gas pump same as before. The work

Victor, a large party, will be here.
Remble and Smith with their own hand
also E. H. Anderson with their own, West N. H.
Water, for engine very low and 20 lb.
Kunming, 20 lb. 100 lb. ordinary

Lamp tests. Box 171. 20 lb. 100 lb.
The comparison made, number of 20 lb
and 100 lb. which result in 20 lb
a lower

Thursday Oct 14, 80

Winter, Barb. by hand,

And man digging trench for pipe
about 100 feet deep to collect
X hole further in road and man some-
thing drain it.

Band of the globe is not standing
X glass not at factory,

Camp Mr. Edison tried one of his
X the pump with water. failed.

Notary, Eng. West Park Mfg Co
Sept 15. Revere Co. 700 ft. 6 ft.
Camp 6.00 m. 6.00 ft. 6.00 ft. 6.00 ft.

Was construction in a line. X
Negative to day, in evening first day.

Friday Oct 15

For the position, but not yet
Glass Home & Carbon Department

Paper, Revere Co. 700 ft. 6 ft.
X Sept 15. Revere Co. 700 ft. 6 ft.

More or less. Revere Co. 700 ft. 6 ft.
And Sept 15. Revere Co. 700 ft. 6 ft.

Revere Co. 700 ft. 6 ft. 6 ft. 6 ft.
in mine and has maintained

6 ft. range. Revere Co. 700 ft. 6 ft.
by means of supply. cannot be used.

The regular cost of 10.00 per ton.
has been 10.00 per ton. 10.00 per ton.

made the difference in the value
making price the remaining ones.
Pat in the same position Aug. 10.

1880. Revere Co. Manufacturing. Revere
Sept 15. Revere Co. 700 ft. 6 ft.
S. S. C. Revere Co. 700 ft. 6 ft.

Saturday, Oct 16. 80.

Free charging land with deer
line paper Aug 10, 1880

About Mr. Nelson went to Huerfano
about 12 miles

Can you show case in your
glass laboratory with canvas
and found as the case is
but in the shape of a box

Car, horses, horses, arranged
apparatus for heating and in
glass in shape of oblong and
cat

Water very low, the stream is drying
was not running, some fish
were broken in drying. Engine
was not the water was down
under the stream

Carrage, Mr. Nelson sent
Bottle of carcase

Plaster, the tin is empty
by the same time as the
X-ray and X-ray is not
each side but the one is
up & down

With general, listing lands
the quantity, more on large
of the property, the land is

Monday Oct. 18

Spent time with John also
at Princeton, N. J.

Visited Bergman's show a small
one in residence arrangements

Plans for the, received

Acute need for hunting water for
Villas,

Visited John at making me on which
some amount some magnetic and
forming him on which are his papers
which he has written about commencing
the action to mechanism which move
the dice pointer

Daughter, building furniture
and daughter's mother

Tuesday Oct. 19

Brush lamp, one bought by Mr. Gb
for a time this A. M. when sent
papers

Received Mr. Bolshakov's report on
the pump, cut off fuel tubes and
Yours Mary across and damaged
tube, worked over, over about 100
Murray has, much, Rk No - 67

Visited Mr. Freeman of Ironman
Kline, Stannum

Abstract of Mr. D. B. as search for
Robinson, Maj. McE, his good
bye for return to California

Chapman Lippor, Francis hunting cartons
of Pi. subject sent a letter in
Chapman's paper created nicely + 1
copy

Wednesday Oct 20

Stationer to factory for material.

Lightness, Friction, Reducing, Contrain
in chlorine, gas.

Resistance box, finished yesterday, test a
you wish, double white, each revolution
of an moving like other to pin in 1, there

Agave - small large shrub of West Indies
 Small tree on large communitates.

Words: Language. However finding speech
of different persons in different and
desire to determine the cause to use
for a while. Subject to brain change.

Visitas Gabi + parly; pueras

Thursday, Oct. 21, 80

Gasoline & Paper Francis Newman
 1000 1500 Michel Newman 1000
 introduction Charlotte Pabel in person
 R. G. 2nd lab N. B. in 15. long

Bush Camp. My little making some
for experiments, on heat of canvas, and to
use of things, here to connect the making
of things, to camp to camp as
Thompson, Mr. Dalton, and Mr. Dalton.

Experiments, Sketches, one with a red
like him & gave me, you both in 1849

Sketches, by Mr Edison dated by ref-
erence to photo. 2. Models of sketches
from lamps to lamps, 2. Annotations
to 1. Diagrams & notes by himself & others

Dear Eugene, I've been here and round
head, but we have to get it started
filling with water.
Yr. L. Bochner

Friday Oct 22-80

Spent Mr. Meuni going to N.Y.
Mr. Weston's home

Acc. Camp. Weston & Fran. who con-
gratulate the expedition on its land-
ing. Laid up to day with lameness
on legs.

Meter, consist of two lamps passing
through balance meter, sensitive to
100 made by Kell Oct. 18.80

Visited. Telephone moved to
hall

Electric Gas experiments cont.
By Franca. Bk. 104 pgs. 175

Rain, heavy rain. Sit in south
X Herb. for good supply of water.

Saturday Oct 23-

Intelligence Gave to Man in Edison
copy of list of T. Co. & Professor's
Kerit paper Easton, in the office
to the Camp. 1878

Carroll, 5 book delivered by the
Camp.

600. 2000. Edison & others. 200.
Automatic Magnet signals

Annotation correspondence of Edison
Spencer of new plates. Sketches by
Edison given to Mr. for the office

Visited. Electrician's Bar. 100.
X agent for Best Books

Monday Oct. 25-80

Exp. in air yesterday air =
Bailey. Trans made to P. 100 ft.

Trans. 13. New found pump up
and working nicely.

Exp. in Trans. up on at 100 ft.
for keeping the air in the
pump to circulation.

Widow, Bailey of P. 100 ft. Bailey
4 May, 1880, 12 miles in running.

Widow, in Book No. 10, pages 1, 10-5
Trans. found of Lamp, 100 ft. only
means of heating.

Carbon, paper, 100 ft. in 100 ft.
Trans. and Nap. 100 ft. in 100 ft.
in 100 ft. carbon 100 ft. in 100 ft.
and 100 ft. in 100 ft.

Oct 25-

Lamp, 100 ft. on pump, Nap. 100 ft. in 100 ft.
100 ft. in 100 ft. 100 ft. in 100 ft.
100 ft. in 100 ft. 100 ft. in 100 ft.
100 ft. in 100 ft. 100 ft. in 100 ft.
100 ft. in 100 ft. 100 ft. in 100 ft.
100 ft. in 100 ft. 100 ft. in 100 ft.

Water, 100 ft. in 100 ft. 100 ft. in 100 ft.
100 ft. in 100 ft. 100 ft. in 100 ft.

Tuesday Oct 26.

Liberty, Baiter & McLean at the station

And Baiter, Fitter putting in station
Spoke for Baiter, factory

Spoke for Baiter, factory

Spoke for Baiter, factory

Spoke for Baiter, factory

Wednesday Oct 27.

Spoke for Baiter, factory

Spoke for Baiter, factory

Spoke for Baiter, factory

Spoke for Baiter, factory

Spoke for Baiter, factory

Spoke for Baiter, factory

Thursday Oct 28

Back. Saw. making cutting. no
xams visible but smaller for
back

Water now running in canal
from pond to top of bank for
water from gully

Interfuser, Health ribbon - Blake
x Wilson

Cable, 25.00 in cable and. 25.00 in
cable. are in use by Home
and both complete

Significant. black engine 10 hp.
all shafting & machinery open 10

Spade holder then visit after me and 25.00
discharge. 25.00 flange. 25.00 shot. 25.00
engine. 25.00 shot. 25.00 shot. 25.00 shot.
engine. 25.00 shot. 25.00 shot. 25.00 shot.

Friday Oct 29. 88

Abroad Mr. Black. started for home
x this morning.

Visitors May. 25.00. 25.00. 25.00.

Testers, to day Mr. Ratchford struck the
X-edge of testing testing chambers on
pumps same as lamps.

Water. Dynamometer taken to gully.

Gasoline. exp. water in gasoline gas. same
off very nice

Saturday Oct 30. 80

Dynamic flow. Men are aging up to 60 years.
Juan sells 4. 1/2 dozen

Amation, long copper strips used,

Work general. Experiments on heating
sodium in gas. Searched working on
Laplace's relation. Long Hill in winter
long conductors. Skin etc. making
steel into, like Fuller's armature

Mr. Barlow: explaining and showing the printer changes to new press without mercury gauge. Referring to pump water from gully.

Regulation Sketches of Apparatus for
Regulating E.M.F. B.K. 60, 1912. etc.

At the same time, the government is to be held responsible for forcing producers to do business

Wednesday Nov. 3

Street Lamps. on Monday night some
Lamps were burned on live past 20's
bars and on Tuesday the entire line
from Farmers to Factory was sup-
plied and burned till nearly 12 o'clock
on Monday night. Butcher's here with
Magnie lantern (street lamp) with the
light good but not strong enough.
Biden man of Glasgow here on Monday

Unwaxed fibr. Pradig. et.

Hi Cybrian Eng. Acca. to day. Str. L. H. G. 2

Walter James, India taken for himself, is getting
frantic with base, and yesterday has motion
taken down and dumped into trough.

Mr. J. H. Hutton, M.D. to Mr. J. H. Hutton
18th Nov. 31. Also Nov 2, page 148

Saturday Nov 6

Pick up Bantam meadow today large
X coarse grass

Amation com. Logans turning. Yignom
Vicat. com for large Amation

Road raised 1/2" by 6 hrs pumping

Keta Mr. Clark at nine Oct 29

Went general of part woods Oct 29

Hammer site on latulating. Statistics
of Rums courses, Edwin & Francis

Stability castles in game. Com. com.

Spitting out lamps in studio. Dams

7 assistants on Amation. Con. in light

on computation, Act on Mules

Seven on Magnitude of large dyn

ame

Nov. 8

Sunday Nov. 7

Sunday. Engine running in affe

Men & boys working. Some at day

by hand. Some during Saturday

night. The water began to rise at

then down. Men. Bostwick. Making

some experiments on sailing gear

of the mechanical film camera. 3 out

of 13 passed test

Monday Nov. 8. 80

Test of lamp, with burner turned. Control

performance. Note. Some are testing. Some

at night. At factory. (Saturday). One carbon

light in the night. Mules off the wire &

Super ammonia. (Saturday). (Saturday). (Saturday)

Interference. (Saturday). (Saturday). (Saturday)

May on which Mr. Bostwick tests the first

test on which

Dynamics. (Saturday). (Saturday). (Saturday)

Tuesday Nov. 9. 80

Interference evidence continued.

Kitter haden repaired & exploded pump on.

Wednesday Nov. 10

Plumber Japanese used very damp.

Interference evidence continued.

Carbon lamp and motor, finished by Andrews. a lamp for holding and passing the current in series.

Thursday Nov. 11. 80

Interference evidence continued. Exact Bell, searching for the original wire transmission.

Friday, Nov. 12

For south. Perhaps, will plan with intention of balance meter.

Saturday Nov. 13
Attention given to the new set of fixtures
made of the same
side plate for larger dynamo and
center Allen Engine altered at depth.

Link gonne for last week. Messrs E. & B.
engaged principally on Interference.
Little doing at factory in consequence
of delay in getting screw pump, which
in shop waiting tools for dynamo &
formation, etc. at work on Electric
dynamometer. Messrs testing the
balance meter, which is giving
good satisfaction. Andrews finished
apparatus for measuring capacity so
the case may be built up without
heating other parts. Also made made
for latmizing some at a time
straight in instant enlarged case.

Small engine tried on small dynamo
found very machine greatly improved
at last engine.

Sunday Nov. 14, '80

Water heater set up in boiler room.
Kettle spinning over door between
machine shop & dynamo room.
In on large pump, to facilitate
flaming machine, & burner.
Pump with its gears to be cast in place.
Gears are 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

Monday Nov 15

Red plate. 8.30 a.m. brought to shop

Hot clamp. Attention to day heater

Clamp through globe & melted the glass

E. L. Co. Board of directors held a
meeting here in evening

Visitors, reports of Harold, & some
other interested in the E. L. Co.

Tuesday Nov 16, '80

Back a load several very large
bundles of Back-plate used at
Factory today

Recd Mr. Weston with family

Meter, records set water cap on ice
Kand pump in to work. Letter to Weston re
repaired

Carlson testing before heating in lamp
Run from 500 up to 106 fpm 63.5°C.

Heat boiler prepared & steam admitted
at Factory

Telegraph wires, the western Union wires
now changed from office to Laboratory

Man Parr, by shoe on machine & lamp

Wednesday, Nov. 17, 80

Papers. Some of today given up at
of lecture by Prof. Weston in which he
claims greater economy & durability
for Massey's Lamp than for Edison
but gives preference in efficiency to E.
dynamo machine. Boston Herald

of Nov. 10. brought by Upton yesterday
has my fan article on Edison. Printed
late by light with lettered dis. & R. 10
with 31 in. cover

Engine foundation, New Remonding soil
from under end of engine room
for foundation for Peter Allen Engine

Back Herring is treating Back
for acids & various solutions to
soften the hair & cuticle. R. 12, 13, 14

Eight wires run under the R. R.
track & four posts set in rear of it
for B. Massey some experiments in the
middle of the 11th wire. Sunday

Thursday, Nov. 18, 80

Weight of cables. Six cables of five
Ropes on 15 in. diameter. Further
than are now safely working were
found to be a much greater weight
by quick calculations. R. 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Some sawing made Back Lamps
today. gave about 1.40 lbs
at 16 c. R. 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Paper Herald, article on Massey
Incandescent lamp with solution
and remarks of Edison about it.

Fiber, package of fine black fiber
very strong used today

Friday Nov-19, 80

Paper, Scientific American of this
week date Nov. 17. has good article
following. Claim to be the promoter
of incandescent lighting, with Maxwell
Sanier & the Englishman, imitator.

His dynamometer, finished by Mrs.
Rut

Long, illumination. floor came out the
shape and showed road all night.

Radio, put in lamps after exhaustion
of energy by heat, because the carbon
destroyed it near lamp.

Moreover, in experiments on lamps at
factory last night, an examination of
the duration showed it to contain Platin
Palladium which had been used in driving

Saturday Nov. 20

North River. The cables to street lamps
except about 1000 feet across and
instead of pushing as job for at ex-
change of 12 men since Sept 25th 80.

Papers, Prof. Norton publishes a card
in the Sun, to effect that his report of
his lecture was a mass of mass of
then reporter, but did not correct it then
or point out the errors.

Large dynamo, polar extensions put in
Krogan Electric, publishing to know of
the

Spark Keys. The single point spark
keys used on pumps, sparkers so large
that Mr. B. had a lot made with
contact.

Nov. 20

Hot Mercury. Mr. B used air from
pallets, and gas jets to heat mercury.
For several times to get quick results.

With general fast work. Red starts for
engine in shop and preliminary plan
of parts in its discs secured on the
ammation shafts. Some progress in
other parts and some. Main 828
repainting at factory in time, at
heating patterns in Cambridge.

Carbonizing also on in shop &
heating mercury. Mr. B. looks at
work on power & motor. Others
on depositing carbons by electrolysis.

Monday Nov 21.

Factory during yesterday. Men at
work at factory putting up wires
and piping for mercury pumps.
using iron stop cocks in all the
piping.

Carbonizing Mond finished by Andrew
and told last night. Mond up-
right, and carbons to hang over
second piece, and be weighed at
the bottom.

Engine, sybilian separated by Alfred.
J. B. water and some delay caused
this morning in repacking.

Buckeye Mr. Glade at work on dynamo
for 1250 lbs. Buckeye engine which he
informs me they are waiting for time
has no dynamo dynamo.

Nov. 22

Electrotype, Arthur on experimenting
for depositing carbon by electrolysis no
results yet than apparently satisfactory

Magnesium, Upton & Clark made up
mind to determine whether zinc base
plate could be deposited into silver
X small base of iron connecting the bolts
with gold made 6 volts difference in
current

Paper, Herold has short notes arranged
for giving them the last of Edison's
X being on exhibition at the Museum
S. Kingsington

Amulet, made for making glass
X for blowing into successfully used
as small for outside use

Tuesday Nov. 23rd

Paper, Part of last evening, distributed
interview with Prof. Butler in which he
says. E's Lamp is 22 years old and
X Marvin says and that E has been
searching for ten years for what he
has found and got.

Visited Mr. Butler here with Assistant
gone to work on patents some 30
X cases of which the drawings have
been prepared and ready for him

Amulet, Dean has seen or small
plaster but was not steady enough
X preparing to use it on Lach's now
cutting the same

Friday Nov 26. 80

Refrs. Tubine gives fair and full
the report of intention with Mr. L.
The main, takes no responsibility
if giving his reservations

Factory. Production set between Pumped
and Lamp and 1/2 lb. steam terms
Glass House removing sections from
furnace with elements of all size from
glazing to replace in glass, flat and
4 plate changes. Run running through
through pump, adding to water in the
before the pump, pump comes.

Business Mr. Glanz pursuing contract
for 10000 of pump and eng.

Also sending New and glass, etc.

Notes, Engine stopped early, accident
caused pump and boiler, which are in a bad state.

Saturday Nov. 27.

Glass 16 tons & 3 tons bearing glass
Lucca this morning

Engines not running to day, no water

Refrs. Comes two orders one Mr. Dranner
for 10000 on City of San Juan
2 days Norton & Barber are down on pump
the building near points of carbon in gas
from vapors.

Wednesday Dec 1, 1880

Alte. Mott used this morning for bones

Wrote learn that Sarah Dunkley must
be married on Sunday.

Spoke on carrying. I find in Boris
No. 125, 1849. 90 lbs. some children
find notes by Mr. Edmon. of 1849.
To submit the carrying way of children
dated Nov. 25-49

Interference. Had going on in the corner
of the house on Monday.

Good dust. Then in Sunday, 1880
the gun for the gun for burning in the corner.

of S. Carbon. treated by Haid with on
Monday, not long ago.

Thursday Dec 2, 1880

Alte. Mott took Bones and sent
to H. S. via go. Hence to Philadelphia

Wrote "Futures," letter of 1880, sending
a copy and others away.

Wrote. Experiment. All up, lands and
found more by going to factory to be
continued then.

Wrote. Address in using the dust
as solution could get in. Next let it
then stand in line after which was
found.

Friday Dec 3. 80

H. R. test at 24 chms. with the Pump
Motor shows its power.

Two cylinder Engine the small engine re-
turned to laboratory to drive pump of
Hydraulic Press.

Vacuum Pumps made last winter were
abandoned. Henry making new pump.
Vacuum tested by magnets, spark wire
and Henry abandoned Henry experiments
for small room in sub. building.
Francis exp. on new pump. Earth pres-
sure and Mercury passing through
contraction into chamber thence to and
through contractions in tubes.

Conductors to factory machine by
adding wire part of way.

Saturday Dec 4. 80

Palmer, Junr. short dissects that
judgment differs in P. O. Sept 12
Edition Ed. in London.

Read Mr. Clark's report on
probability of improving engine last
of following week.

Pump. finished in cast.

Gasoline, Giovanni interviewing in
the of hand vac. in pump and exp. in
building stations.

W. A. general working as Engineer
of machine. Glass lower. Repairing pump.
Mr. Barsh. repairing for better pump.
Mr. Eadie exp. on high vacuum
and lamps.

Monday Dec 6, 1880

Cable. Serv of Sunday has
report of interview with J.A.E.
20 days given before starting
Miss Eng. & the lamps.

Spent dynamo. Circulation removed for
turning at factory for running for testing

Indicate, McKenzie using Magnet. can
the indicate as per mounting.

Factory. Mot. from up stain, & visible
Exp. in brain room to him. & how far
dent was after repair of armature.

Pumps. Man cleaning lower pump.
Two pumps in experiment, with collector
Order on separate 2 max. test & installed

Lab. blank in N. 4.

Tuesday Dec 7, 80

Clear Murray. Hoffman grinding
glass for cleaning mercury

Similar service with Mag. test. two am.

Lamps. 4 of the 12 lamps in case are
still burning after 180 hours.

Pumps. The extra tube contractions
pieces not found so good as was
expected. Pump pump up and pump
being corrected.

The dynamometer up complete and
gives same deflections with the same
weight in line on the scale.

Wednesday Dec 8 - 80

Silver Swan Dean abandoned gas
Subsidiary bellows and one other character

Good by boat sailing, Mr. Leland making
tests of loss by loose currents, seeing
you machine as well. Little lane
having been sufficiently demonstrated as
to accuracy and reliability

Camp shown on by Holger with
of the for exhausting, connector to
inner tube from inside

Interference from telephone sound

Pump proven runs some into
mercury, vacuum pump connected
with tube from with ground glass
through which the mercury passes

Thursday Dec 9, 80

Interference continues resumed in
General telephone case

American Machinist this week mentions
from Maxima Lamp as accomplished
results sought for by Mr. E.

Telephone, a pair brought by Dingman
made to admit of operating, better
away from mouth piece, put up for use

More list Rudmann's engine making
List of diagrams, destroyed Amalmer

Some pumps, working Mercury very
satisfactorily, estimate at 500 pounds

Friday Dec 10, 80

Paper. Fruits hairs the British
light for adults in N.Y. as a grace
Christmas gift to the lady. says
We are expected. Edwards lamp to do. have
hold only but think some are used
because on for that purpose

Large Magnets. Repair winding with
to layers double wound. wire size on other

Sealing tips, repair lamp with goose
neck like head in back and bulb
like parasite, for sealing off lamps
with straight wire and wires

William Hale, Agent of American line
from sample of sort for furnishing
the lady of Rome.

Saturday Dec 11, 80

Revised. General appeared this
morning having arrived from Canada
late last night

Carlson's superior Hammer. Hammer
for loops on iron casters in case
pump on which gasoline is indicated
get sealing but not so easy

See by minute, constants determine
Mr. Nichols for me. finish in shop
Bottle No. 118/page 1174

Shate bars for burning dust coal used.

Wednesday Dec 15, 80

Local loss. Mr. Clark finished
test & measurements of local loss,
X since made another to test accuracy
etc. Loss about $\frac{1}{2}$ h.p. B.B. M. p. 111

Electrotype, esp. continue by, Ashcroft
X note No. 165, page 142

Carbon plating, Gerson put up plating
X carbon at factory.

Smith. Hartman visiting in room and
alcohol.

Miss Bredeman.

$\frac{1}{2}$ h.p. burned at 2.30 h.p.
X after being burned at 16 for some time

Thursday Dec 16, 80

Small dynamo taken to factory for
X in an generator for current for dynamo

Interior decorations. All finished this &
X brush work put over joints very satisfactory

X's lamp lasted 16 h.p.

Account, Ashcroft at Hurd's Point brought
X record of Ashcroft after consultation

Reeds hanging, M. etc. suggested to set them
X in motion at bottom of spring & up at top

Friday Dec 17-

Water so low. Train derailed

Dynamo Station. Ashes on twisted cables
Saw 200 repairs each week for Ma. engine

Thompson full time up with lamp oil

Spoke dynamo, running from center
Shaft driven by power motor

Gas turbine Co. in case of, Springfield
by American

Repair "Post" Man Laffy for Bush

Saturday Dec 18. 20.

Small Elec. Eng. Man. Electric from 200 ft. in
the big in the winding of the magnet, it
was then pulled to lower and run on van
first fuel through in engine

Work, general. In shop, work being
Spoke dynamo in large dynamo. At
last, 200 ft. in. 200 ft. in. 200 ft. in.
Magnet mounting

Revised, general. Elec. motor in 200 ft. in
X with upright engine in 200 ft. in

Monday Dec 20, 80

1867 lamps inside and about 47 in
 X made up and burning last night 181
 7 per indicated H.P. of Edison's 50 watts by Mr. 80

Eng test. New blank test in direction
 of engine while supplying 196 lamps
 found 5.75 inches 1. and 1.5 inches

Visitors last night. Buder man and
 Yarnum present.

X local large burning under boiler

Smaller the eng, again obtained
 X could not be made to run. Mr.
 E. finally made the connection then

Visitors Alderson with city - south
 "lay out" about 230 lamps
 displayed

Tuesday Dec 21, 80

Papers, Accounts of the Illumination
 and speaker here last evening
 X Also. Note in London the Edison
 light was decided apt. Edison

Light. Alderson with cartons loaded
 X in before practice

Light. Alderson. Laying. Laying. wires
 X cartons together

Wednesday Decr 22.80

Visited Brewer & Walstroms old camp

Sacramento Cal.

Abund. Mouse. Edin & Warts & Bats.

Motor tested 2600 Revs in 92 mts.

Lamps, 32 or 34 - 9 1/2 c each
but 6, 15 c each.

Thursday Decr 23.80

Engine, Now running on camx-fine
Coal 1/2 - and charcoal water.

Dynamo large head blocks tied in and

Wires. Haulin of Mr. K & Haulin with
3 pulleys.

Motor Mr. Dyer taking the run to
determine the fault of 61 ohms.
Normality, Mr. Dyer is in favor
of winding it about 2 ohms,
later out to record.

American Wire runs out in Salinas &
Yonkers white sheet tin line bound out door
drop

Lamp sets commenced testing at
& Dyer with Dynamometer

Tuesday Dec 28. 80

Two lights put out and economy
test of engine made. 75 Rev 96 lbs
steam, 64 lbs horse power on engine
we. last night again burning

About 6 P.M. about Friday 1st
This morning.

Well on Friday some further
work and preparations made
for starting engine well. Reheat
work commenced Monday morning

Today the second trial of pump
completed during day, about 10
yet started, no carburetor.

Motor small, gas pressure and
thin of shafting put up to be run
by it.

Rebuilding Achern decided that
by excluding the air from the
while cooling, they retain motor
color.

Wednesday Dec 29

Paper Herald, dispatch from Phila that
C.A. Engine is finished and order shipped
also that. Res. reply from Larr. Commerce
allowing E.L. Co. to put in same at 10.15
personal part of that dispatch & also you
pay 3 inch of gas receipt

About 11.15 Edison & Clarke in 11.31
Killed Maj. Eaton.

1/2 10.30 lamp comparison test with school
& 1/2 10.30 lamp comparison test with school

Washer taken to factory, to another

Dec 29

Got the last 100 amperes & 175 volts
to day at 48% amperage 12-17 = 1000 W.

Thursday Dec 30, 80

Power no power in morning changing
batteries for Organ Case.

Plating for sketches for forming drawing
for similarity, sent of plating separator
made by Mr. E. active in Dec. in Mott
done for past office drawings

Separating the second bag lamp shown
delivered completely and taken to West house

Left of Rome. Mr. Clarke came in and went
in detail of Epiano bag for left of Rome

Friday Dec 31, 80

Watch. Mr. Mott watched all last
night to discern if possible the
cause of the A. M. Smith plug being
misplaced, at 6 steam tube showed
out and some other laboratory

Abundant Mr. Clarke in Pilsen
Hornets. Continued.

Present Mr. Edison say, and of the reader
X can run M. G. 3000 W.

1880 discs with two new members in 1880
of last Smith's to day and things
in readiness for illumination tomorrow
night very cold.

Smith's Mottas the eastern from the
factory moved house in other some
very high resistance from 200 to 1000
inches. Induced in the other end of the line
from eastern with the line

Dec 31-90

Factory. Notice given that Mr. V.
will have charge on after Jan 1.

Mr. Bantam. Van G. carburetor and
valve. Still out from samples
Xanthone by Brach. It has been sent by
agent sent to Japan, very fine clear
prisms Bantam.

Saturday Jan 1, 91

Carburetor Johnson got very
good results on ordinary charcoal
stippled by passing gas of Methane
first through tube during heating.

Wed. Holiday. No one working
except in passing to illumination
408 lamps lit in evening and
number of visitors here, especially

test of engine made by Clarke
Eng 75 H.P. 82.5 H.P. 400 lamps lit
51.25 H.P. 408 lamps 6.59 per H.P.
Price of oil 7.88 on 2.58 lbs. of oil
per H.P. per hour, balance 110
diagrams, perfect.

Paper World, Edison, Melanich,
long article, Edison represented.

Sunday Jan 3, 91

Visitors, Mr. Green, Wood, Mr. M.
Juma to talk with me in his house.
Also the King of Science, Mr. M.
with artist also Dickinson in evening.

Will. M. but not seen our engine and
Xanthone along to continue digging, 15th

by 10th two in one dish in same position!
Factory.

Jan'y 3. 81.

Laid cable on rail thru mine tunnel
and encased with lead, met at Salangay

Thursday Jan'y 4. 81

Visited Wilber, saws, light, water
X some granitic to E. corner during day gran
L. road and 4 bags of powder.

Lead lines tested by Francis, mine road is
X the best, most notably on 2000 day

Mr. Engineer, new man, arrived, Mr. Mason
X Mr. L. to Northern resident with
Francis.

Visited Allen, saw all and all in waste
Jan'y 5. 81

Working to move water down damper
X in gully & inserted a carbon loop
successfully.

Wednesday Jan'y 5. 81

Platynus carbon Lanson holes carbon
in solution of Platinum chloride, water
from Wilber, the solution heating to red
X in vacuum to drive off the chlorine
Lanson in solution in 2000 of the carbon
in finely divided state 530 to 535
RM 106.79. 137-

X Platinus Wilber in clay.

Working more commenced building
X for coal in today building on to
new building on building on to
old building for glass storage etc.

Sacramento station completed a car
X for 2000 for B. Lamp, style & plan of
one made by Motte Nov. 26.

Grammar to show not assistance as
X like special measures, as that when

Thursday Jan'y 6, 81

Amos special, Logan is sending
magazines with about 40-45 No
man for general for Building Office
in New York.

Carbonization, Acheson is getting
very good results (metallic carbon)
the tube with 10 tubes per duct by
high use heat.

Illumination, lit about 20 lamps
xite & celero, at 175-180 No
test made, broken up, 11 engines.

Willis, Logan & others, James Morgan
xite, Jennings & James & a number
of others, still in the in C. West.

Lamp, Dawson, directed to make
test with 200, 10 in lamps.

Friday Jan'y 7, 81

Where seen, short description of
xite lamps, like last night, and
which is subject of the Edison Eng.

Platinum carbon, on lamps, low with
shown by high vacuum on same current
with regular at high - no. 10, 10, 10.

Outside circuits 377 posts in 10 p. = 382
xite lamps on 4 in operation.

Amos, Mr. Edison made notes
xite, 11-12 or 20, drawing of
Amos, with due care.

Tuesday, Aug 11

Carlton Jensen, American, making model
design by Bachtel for Royal, catamaran.

P.G. Eng. in. Model. Design. Plans
have moved into Eng. room.

Went. Mr. Edson P.L. acc. way.

Saw. Mr. Dyer, same house as Bachtel.

Almatu Jean, commenced getting
together on the commutator.
Model of wood & baltwood. design
commutator now making.

Aug 12

Special Almatu single wind for P.L.
Generator tested 0.38, the half less
than expected.

Wednesday, Aug 13

Bracket double jointed spring
Contact solid, just finished by St.

Plating apparatus finished by Cannon
X-ray & thumb screw to regulate the
depth of the plating.

Calamb by deposit. Also made 1. Plan
wooden strips with hair, rubber cut
to hold the inner tube submersed and
wood strips had it pulled up by a screw.

Order was given no 24 for in Engine
Room to have P.L. tank engine etc.

Large dynamo The last magnet core
Peculiar & ready for "big"

Albert Messer Edson Schwan Bachtel
Toni New York

Thursday Jan 13, 81

Factor, Birds, alvina and men
 set out on Belin foundation etc.
 in corner of lot.

John E. O. Hamilton, Eng. under R.H.

Expt. lamps. all gone but. Flamingo lamp
 Mr. Evans engine. determine it had fuel
 oil at 36 candles. instead of 48 candles.
 Experiments continued during the night
 and in the morning found that the oil had
 been made in taking on in the night of 200.
 special uper lamp at the Laboratory.

Motor base ^{Jan 14} for 2 signs of Weston
 the engine plans and in large
 plans.

A

Friday Jan 14, 81

Papers. This week "Scientific American"
 gives letters & describes the Belin engine
 some very well with short description article.

Special Experimental Camps "H. H. Madsen"
 Last night sent up & letter by Evans

Wire. Signal of Westing. volume of wire
 light. is now made to run in
 at same time. Reports of Gas & Steam
 engine. at New York.

Sketch made by Dr. design for wire
 chassis.

Sketch of engine made, spring, base
 in center, each has 2 fine steel rods
 & pulleys & journal holes through for the
 screw spring ends for the glass to
 fit in.

Saturday Jan 13, 81

Absent, Mr. Edison in New York
L.P. Mott left for home, 11:20

Worked on the for part week. Went
at work in building additions at
factory. Continued continuing experiment
on coating carbon, & began to
prepare for the Mini Engine
Gears & Assist to on Alternator
Model drive gear, made
by Birmingham, A. Mearns
of Eng. Co. tested at 11:30

7

Patent

method ref
Spring & programming

pulling several fine pieces.

~~Patent was applied for~~

du mit mir, -

He is with these people much more than
Shog, cannot resist in any way.

Break out with

Mica Commutator

List of Carbyzella subgenera:

211 ^{list of Carbonyl compounds} ~~amph~~ with top and sides a

blow bulbs of white
glass

1932-33

Jello Factory Lamp tests 119, 171, 172
 Nichols Meters 109, 118
 Edison Sketches for Patents 60 V
 Bacteria Power experiments etc 136 Lf
 Adams Electrodynam. Expts. 153-V
 Edison Experiments at Factory 186 V
 Edison Outside Lamp tests 178 V
 Edison Statistics condensed 120 V
 Edison Experiments on carbons 168 V
 Edison Experiments on lamps for 189-
 Edison from Factory (Sketches) 186 V
 Edison Test Bar & Bumboo 166 p. 2

E. W. Gurnea
 174 V
 Kugler and Co.

Col. Stewart Worthington
 Rte. Man. & Kensington,



Mott Journal #6 [PN-81-01-19]

This is the last of six pocket notebooks used by Charles P. Mott, a member of the office staff at Menlo Park, to record daily activities at the laboratory. The entries from these notebooks were used as the basis for more extensive entries recorded by Mott in Menlo Park Notebooks #53 and #117. The entries in this pocket notebook, which covers the period January-March 1881, continue beyond the entries in Menlo Park Notebook #117, which ends in January 1881. The front cover is labeled "155" and is inscribed "C. P. Mott Jan'y 19. 81" and "6." The pages are unnumbered. Approximately 50 pages have been used.

Wednesday Jan 19.81

Telephone, one box of red
from Bergmann's, magnolia call
from main etc.

Carbonization. Mr. Balthus let
I should find factory - carbonized
now, taken away again without
opening.

Carbonization about 500 lamps
was burned last night a
large number of bottles were
the evening. Cummings
blacker, McWesson & Robbins, Perry
and a number large gas con-
sumers.

Seven lamps. Mott made Pot of
Kerosene seven lamps. 1 L. 11.
According to resistance.

Thursday, Jan, 20, 1881

Lat. Sacra. a package of Ral-
 X sent for stamps recd from Santiago

Alfred. Howard. Article of the
 X paper "Clarke" good. also recd
 privileges from City to lay wires

located one or putting up line of lamp
 X for heating inner passage or heating
 making machine for gas, etc.

Will. Mum sent some additional gifts
 X minor digging work.

Model lamps are being made at the
 X factory various designs & shapes sent
 for Foreign Patent.

Minimization, legislated again
 X a number of articles

Friday, Jan, 21, 1881

Editor. Herald has about editorial
 on the unfairness of the regulations
 X of the City, re the City. for the
 privilege of putting in wires etc.

Episcopal Synod. for Feb. 1881 gave
 X a letter at head of Synod re. Synod
 Synod.

Calderington, called by Peterson
 X government by Reid and Horner
 making suggestions to Department
 on creating, etc. present & absent

Minimization, let again to sign for
 X Minister. Examination of Pat. Office
 took over for & returned to the
 on the office

Alfred. Howard common and plain
 X kind of large domestic places

Saturday, Aug. 22. 81

Spica Dynamo. Two half lamps set
in special air-circ. revolution and
gave about 5 candle white lamp.
64 volts at Rheine. 46 at last lamp.
Output runs at 52.55 at 1st lamp & 57.5 at last.
Lamp 12.75 - 44 cts.

Absent Mr. Edison -

Mills. recd. from Bergmann

Carbon coating. Howell tried on air
pump to coat with glycine & Phil
acid, N. G.

Work general, large dynamo making
completion, special machine for
N. G. furnace and tubes. All making
hard sulfur pencils. Also on the bench
for making contacts.

Monday Aug. 24. 81

Boiler. No steam yesterday and the
furnace thoroughly cleaned and
examined.

Absent Mr. E. Mr. R. at N. Y.

Carpenter shop. Store room back of
Laboratory cleaned for Carpenter shop -

Carbon coating. Howell got good results
on ^{in lamp} back of tube. Sulfur, on plate of
back carbon in air pump.

Standard lamp. Francis claims he
has fully demonstrated a lamp that
in any case, double the energy
gives 8 times the candlepower.

Tuesday Jan'y 25-81

Albert W. Edison again at N.Y.

Plating the steel plates to nickel
X-ray fitting. E. Messersing. Thursday
on ends before placing in solution.

Plate Nichols. some wire cable
in circuit, close.

Special N.Y. dynamo shipped to day.

Cable pipe. Sketch made by Mr. C. of pipe
with insulating pieces joined together
from contact and admin. of running
in an insulating material.

Sparks put in cable and a slight
glowing turned off.

Farley small got slow motion and

Wednesday Jan'y 26.

Carbonylizing. 1st mould taken from
the furnace in furnace room opened
just at 100 B. at 750° F.

Steam calorimeter test, preliminary made
by Blaker & Ashwin. Steam determined
to be superheated, 155° F. at 101. - carb. 17.5 B.

Machine Exp. machine full fed from
the main multiple arc wires, very good
results but Francis thinks not so good as
one exciting machine.

Illumination. All lamps. Let only keep
working smoothly. Several Maxim's
burn here, also Lowy. Several
some apparatus & plenty of wires.

Electric Note made Pat. Office drawings
of lamp socket in connection with the
universal bracket.

Thursday, Jan'y 27, '81

About Mr. Edson reported to leave
gone to Washington

Pat. City man here today at work
X Building engine to get in

X Space down. Some making some
X Machine for building long exp

Carbonization. Acherson got excellent distill
X Various carbons at low heat in long
combustion tube, heated the whole in get

Alumination, lit this evening at
X Number of visitors here

X Spoke. We made studies of a
X Number of different isocetes. Jan'y 27, '81

Friday, Jan'y 28

About Mr. E still absent
X Mr. Goddard here nearly
All day

X Tab. Indicators rec'd last night
X and adjusted changed & run by Mr. (name)

Carbon hum. distill. Alumina, magnesia
X Montic, silica, cerium, quick
Barium chloride. Mechanical mixture
in ester, applied with brush on piece of

X Elevator put in. Factory from Glass
Depth up to 2nd floor

Plat Expansion. Exp made by study
of expansion of platonic by constant
X studying the adaptability for other
purposes

Carbonization 1 Mord B. Performance 110 to 135°

Saturday Jan 27

Wine, Hutton, Fine, Cunningham & others
X. M. starting dynamo & setting up each
for Hutton & Hutton in 11.45 St.

Factory Eng. received on service
to day.

12 hrs test engine & lamps run all
night 12 hrs and test made 426
No 423 10 current of 10 machine side
to total 10.

Second test of circuit in 11.45
X 2 ohms on. Antipode made 2000
28 ohms.

Monday Jan 31

Wine, Hutton, Fine & Man to set up bag
Antipode 11.45 Hutton & Hutton

Plumbago Holiday made plates & pieces
The two cylinder engine for pressing
plumbago in Hydraulic Press.

Carting, M. B. carting 1000 lbs
X 2 ohms on which to carting paper
by current in bill of air pump.

Tuesday Feb 1. 81.

Standard last disc tested all o.k.

Carbonization, paper was carbonized
Ketchum and carbon, very metallic but
some black.

Miss Mr. B. had relief made for
working up mine.

Mining lamp. Still made by Messrs
Ginn. Orders to make lamp. sent
to be in for answer to be in
current without a bank

Present Mr. Clarke in N.Y.

Wednesday Feb 2. 81

Plate clamps, excellent record.
Flat wire incision of metal discolored
on negative pole.

Absent Mr. Edison & Clarke in N.Y.

Carbonization, Larsson & Ashman state
get nearer to experiment on carbonizing
got best results, better in later with
gas

Carbonization, all lamps lit. for
persons here, very cold, covering
Sulley again sleeping.

Special carbons, two special carbon
lamps were sent up, tested us &
on my line in glite, no better record
any

Thursday Feb. 3. 81

Carburettion, iron scoria kept in
faster air driven out by Gasoline
gas & heated by current

Wider house from Sabon

Wider Mr. Andrews making galvanic for
hardening of induction dynamo for motor
experiments

Paper salted in, used & some paper salted
very nicely, Carburetted by Sabon

Hydrocarbon present taken apart for
experimenting

Aluminum, methanol, methanol, since but
for methanol are some water in line
on first methanol off from 5 lamp
on other circuit

Friday, Feb. 4. 81

Absent Mr. Batchelor left at 11:30 to
take the ~~Carburettion~~ in car to the
encouraging Edison in N.Y.

Visit, Bigler & Hartung, some ends
from Baltimore

Edgar Imman, Commutator and
the side ends placed on shaft
and have being placed.

Carburettion in hard gas very fine
gas blue, with common gas in the
from line of testing in end of furnace

Metal, some etc. placed, not from
off, probellum for the short work
for balance metal, furnace with flame
shaded air, means and arranged
to count at each rotation of the
shaft

Saturday, Feby. 6-81

Leahman, Dr. Haia claims to have
been awarded \$100 for Malaria control

Whiting Bug Dynamometer finished
Kolar gave small amount to show
the 2 new lamps to about 8 candles each

Leahman, Dr. Haia used for
\$100

After Mon. Haia seen some light
will come to complete the engine

Will general Barker, remain here
by Haia, Mr. Baistula saw for
Joseph. Mr. E. considerable time
for Mr. Haia, arranging office on
5th Avenue, Large Amusement Place
on shaft. Bug Dynamometer finished

Sunday, Feby. 8-81

And Indians, Mar. through one only
arranged & working good with me. No doubt
can for same. Two with small buttons
for signals 2 of a constant 20 to 25 feet
into the valley, perhaps yesterday.

Start Mains, designs being made
by Mr. Kressi, of other connections
etc. for same.

Mt. Francis experimenting with
Kressi motor for mile 21.5 miles, by
request of Mr. Edison

Hangar of main driving pulley
placed with rods from wall
each side

Test made copy of Mr. G.
list as arranged for publication

Monday Feb. 7.

X 19. pages -

Contract also made copy of
contract Lamb Co with Light
Co. for exclusive privilege
at 50c each sheet to profit over
that by 5c to be over the 82 edition
50c to be given to Light Co.

Abstracts Am. & Europe in New York.

Morning. S. H. Mitt. and others. To go
to N. Y. with all others.

Thompson, Asherson commenced
X paper on Thompson and Hydrocarbon
Buss.

Tuesday Feb. 8. 81

Thompson, Asherson received a
fine sheet in the air and had
Bradley cut out a large cut
very nicely. but too thick. Pressed
some more sheets about 100.

Large Amalgam. All copies on
X no. 1000.

Illustration. Set in the evening.
X Special train loaded by car
from Missouri.

Cartonage. Dr. Hara had made
a bag of Hydrocarbon. one of the
X gas furnace at factory, upland
to try to produce. Mutual. Eastern
Lumber.

Abstract of S. H. Mitt. & others.

Wednesday Feb. 9. 81

Visited Mr. E. & Johnson all day.

Factory Engine got under shaft
of building.

Plating, Larson, bying strain like
Xing. Linsen, putting it in place
a train. It was encased in tin.

Memoranda, let in evening.

X Large number taken from night
herbivore.

Papers, Remont, papers said to
have favorable articles on the
display last evening.

Thursday Feb. 10. 81

After carbon. Dr. Haid passed gas
through mould in Gas Furnace.
Not Factory, in paper Banco carbon
got poor results.

Mineralogy. Arthur got a couple
Xaps. Not iron, pressed machine &
Xing. & Xing. & Xing. & Xing. & Xing.
in clamping & one in putting in lamp.

Visited Mr. Edison, Johnson, Haid
Xing. & Xing. & Xing.

Plating, Larson, put in Xing. &
Xing. & Xing. & Xing. & Xing. & Xing.
some connections through rubber
tubes.

Will. Dilling, Xing. at about 12.6
put apparatus being taken down.

Friday, Feb'y 11, 81

Carbon deposit. Dr. Haide passed through
gas through mud too high, back at same
then found in Hydro. back gas, and again
and nitrogen in cooling, for loops.

Plumbago, Ashes, pressed and sent a
quantity of loops and g. v. 7 diam. 24
5 in. Loops ready for use.

Plating, loops, sent in by Lawrence
Xite in the necessary amount, proving
the highest & most first deposit, sent
out in crushing bath.

Weld. Metal, all with some 2 in. in
loop connections, some the hot box
not in use, very little from other
quite large.

Thompson's for electric, H. H. H.
X. H. H.

Saturday, Feb'y 12, 81

Hanchette, Samble for more
being tested. Hanchette so far
making the best & an excellent
Xcessed, full loops drawing 1/2 ampere
in carbonizing make much better
used than with full weight 1316
209, bge 3 etc.

Amature, large Amature finished
X complete ready for plating, tested
and found to be high resistance.

Welding metal of past work, Dr. Haide
creating carbon loops. Ashes
pressing, plumbago, and a few
Hanks of the loops, 2.2 some small
large Amature finished, & found
to be high, & commenced plating in
quantity in troughs at Factory.

Wednesday Feb. 16.

Robert G. P. Moto since Saturday.

Annulars find on return the large
remains apart & I was soldering
the joints, by electric arc.

Plumb clamps, Achern has had
Kilmabago lamp burning, Mr. E.
was pleased with it, I suspect.

Notes given read signed by Mr.
Leavitt, General Manager, Robert in
shop & Laboratory.

Miles Carbonate for evaporation made
by John A. Leavitt, ^{at station} ~~at station~~
to open when liquid at a certain
point in pipe.

* Fibers of fine cloth used from Bremen.

Thursday Feb. 17. 81.

Clamps, deposit with abolition at the
factory. All castings to be plated on.

Plumb. don't. contraction tubes being
into one common tube being tube 2.

Plating Apparatus. Carver had made
flat shallow dish, mounted with
flange in bottom through which pass
the inner & outer funnel tubes. New
tube filled with plating solution up
to proper height on carbons.

Large Annulars, again together and
tested on 14. 81.

Plumbago, after heating on plumbago
seemed to be much stronger. Drilled
of the clamps & plated by Achern.

Friday Feb. 19. 81

Printage blades in moulds, to get
cut & out for clamping 15. more elastic

Insulation. Mr. Burns' machine rep.
grids. Compensate not varying positions of
Paraffin, insulation to commencing
operations at building in Washington St.

10 H.P. Engine. Hampden, 1150 H.P. and
X-ray Shop.

Visitors. Geo. C. C. Thompson
to burn the lamps and burners.

Metal. Alt. complete in with blade
on spring, which in increasing in
weight, desired and by a spring, slip
of frame. Straight and 4 in. in to
which hand is attached.

Saturday Feb. 19. 81

Hydro carbon. Dr. Haid. still require
venting to get loops of uniform, cutting.

Brutledge. Annature. Copper, blades, needed
and work to day commenced cutting
X-ray discs & bars for Brutledge Annature.
Smaller in some pieces also commenced.

Potter Annature. safely deposited in
the train.

Work general for east-west. Dr. Haid
recommencing, still in depositing metal.
Hydro carbon. Potter radial Annature.
Have removed & sold out as hanging. Annature
down to 24 average work commencing on
discs ~~Annature~~. A number of Annature
Lamps made & then Annature. Mr.
Edison & others absent at N. Y.

Sunday, Feb 20, 81

Insulation, Francis tested with engine
from 900 & Thompson's etc. etc. etc. the
insulation of paper very good insulation

Radio dynamo, All in readiness and
Magnets connected in series

Monday, Feb 21

Mr. Francis determined the speed
proportional to the current, from 143

Monday, Feb 21, 81

Rise Amature, Dean commenced action
Sinter sink in mass, in fine amature

Acce. Another amature moved with
the base due inability to adjust just
under the mica-protecting ring.

E.g. lamp. 42. plate lamp. cooling D.
Xanth. B. Wright started this P.M. for test
at 1.30

Brass blue. but from Rinas can be varied
No. 2. L. & D. No. 1. like last. larger
quantity along bank of Amazon.

L. L. L. but can be worked L. & D.
25 in. flange out of 150 lines Harmonia.
Abundant grass of long without joint
from the whole drying. I Guaranahy
N. G.

Tuesday July 22. 81
 X Now in morning, now not running
 Victor Motor. Various connections magnified
 in multiple arc in main line and with
 lamps, higher speed as lamps are to 7
 armature then reverse? (or resistance)

New lamp. 5 castles, some in lamp
 for slating, sealed in nichrome plate
 handle well, give good appearance,

Deposit on paper. A mound of paper
 X Carbon treated by Haid, very irregular
 but irregular deposit

Phintaga. 1 lamp tested by Haid, 6
 X When cold, est. 5 ft. 21 mls. 4.138 ft
 lbs at 16 c. alt. 8 per H.P. 13 mts. 232 ft. 95

Engine, Hampton. Used empty. Haid, from
 X action not sufficient. Put big iron
 plate,

Wednesday July 23. 81
 X Hampton Eng. run. 440. with 70 lbs. steam
 X Haid, 11.33 Revs. empty, 1230 = 60 steam
 Haid, 11.33 Revs. 57, lamps, 16

X Shop fixtures, brackets used & D. Lammert
 X assistant putting on in shop

New lamp. Lamp heated in lamp
 X standing area, water drawn in lamp
 one destroyed by running.

X Haid, 11.33 Revs. 57, lamps, 16
 X says a great many experiments will
 have to be tried.

X 1st lamp, 42, all gone but 16 in. about 10 lbs
 X from vacuum

X 7 papers, large Haid, treated sent
 to Laboratory

Thursday July 24. '51

Wt. Eng. came about two minutes from
probably to see Mr. Smith for electric stuff.
He came with plates found sticks in edis
leaving commutator out. Run in evening
all the lamps at 5-30 P.M.

Factory. Bolson found up ends slow
wood fire.

Plating. Lanson had for 1.00 lb. made
and put in 54.00 lb. about 24.34

Hydro carbon. Hairs get a number
of rays. Nice ones and some are
nice. Has determined the conductivity
Some placed on test for 18 hours

Small metal. Magnesium + Aluminum
resistance

Friday July 25. '51

Factory. Section taken from side of
Kamson room and using across into
into end of room.

Pyro. about 27 lbs. treated by Hairs
in plating.

1.5 hp Motor. 7.2 layers 0.20 mic on

Magnesium. 2.34 ohms. Hairs. R. 2.32 p. 111

Saturday, Feb. 26, 81.

Peter Allen runs all day at about 800
feet to smooth her up.

Imitation iron from Alaska tried by
Francis.

Spence taking letters from laboratory
and connects to later arrangements.

Heater cups a box set of 10 per meter cups.

Under general past work. Peter Engineer
runs for the first. Arrangements finished.

And work began on disc commutator.

Visited at factory find up Heia experiment
on electrolysis. Francis on Motor Machine
Eating black. Peter Mower. Run about
all work.

Monday, Feb. 28.

Peter Allen, runs ^{last night} at 600 P.M.
of about 18% proving that she will do
well that has been expected of her on 800.
To day Mr. Peter has altered condition changed
to have voltmeter etc.

Print Motor from factory sent to shop
to replace with another machine.

Took Francis looking lamps all day.
Krombager (4 to 5 times). 3.45 P.M.
arrange. Box No. 244 pgs. 174 etc.

Tuesday March. 1-81

Paper, & said Article stating that
of department in connection with
X E. L. to have been organized and
filled. I did not authorize any and among
concerns to him to put any series in the
Studio and all more we have assist.

Applombage. D. Comp. put on test-latin at 45°C
+ broke very gentle & test. Success very low. Lat. lat.
Each one mulling & mulling to press same
Main here for description to make dis.

Medes, Francis gone back to old
principles of retaining slaves

W. H. Phelps. Informant by Sec. v. H. H. Phelps.
Germans. Boatswain, some have been
men for W. H. Phelps.

Wednesday Mich 2-61

San Francisco, double size holding 50.
~~Form~~ in use & of size to hold 100
 wire pen informed; be tried

Pumps Mercury. All being taken
down & removed with new pump
 hoses. Engine pumps too inefficient
 for the trials & larger one will prob-
 ably be ordered.

Looked at the Cape and Oct and 19
additional lamps put up in shop.

Reproduction One Machine burned
out in starting, but not 9 lamps thus
show well.

Spencer McManus & party in special
train Philad.
Sat 2: meaning under connection for placing

Thursday Mch, 381

John Engine run at 1135 for about
Xhr. 20 min. Oil for heat slightly and over
stepping engine was from day tight.
Lateral motion taken out of disc.

Elimination this evening light
Xgenerator running.

Walter blank in evening with
drawings of disc commutator &
sample of work.

Exhaustor. One repaired to day
The other found last evening
will have to be repaired.

Friday March 1st 81

Hamilton Eng. running 1135-1200 lights
on

Patent beam running about 200 p.m.
fully all day. examined some but
did not cut or stop.

Lamp tests 20. 1000 ft. up generally
Xhr. 20 min. running 10.40 min. with
but 15 broken.

Miles Francis working on Mch.
Xhr. 20 min. lined glass tube
Xhr. 20 min. solution
Xhr. 20 min. weighed. tube then in
and copied 20. 5 and on machine.

Xhr. 20 min. All shut down at 8 o'clock

Saturday, Feb. 6, 81

Geographical. All antique instruments
packed for shipping to N.S.

Engineer Porter & Thompson left for mining
the day before. Halcyon, Port. empty.
At 3 PM. Pro. found. after heat from
return empty of specimen to about 500

Work general, past week. Ashurst fine
passing to press & cut. Slime bags broke
Sept. about in N.S. most of the week

Get assistance passing and making
good progress on dice commutator.

Thompson Eng. started on only

lamp. Porter Eng. has run there
or has to try to get heat out of
bearings. Test of lamp. being

made on table in Laboratory.

Thompson. Close work to day. Having
been disturbed Feb. 6. Early.

Monday Feb. 7, 81

Dice Asmation. All papers done
Lana was better packed for shipment
to New York.

Plating & on trough in use to day.
150 carbons plated.

Spin. 6 lamps. A trip made
off in about 8 hours.

Good Asmation done by Thompson.

Engine cross & on commutator.

Tuesday, Dec. 8, 81

Editha's Front Angles, being all destroyed
in ruin of evidence in intelligence

Paper Lamp. Made by L. Hara
Gutter by Francis. 36 to 90 wings.
45 1/2 - others Bl. 244 sq. 231 u

Quoted by Francis, 36 to 40 average
45 1/5 - other Bk. 244 pag. 231. Ue

46-1/3-ОКНВ РВ. 244 дог. 231 и

Porter Eng. mvd this morning 11.00
Xena again is very fast in the
solid bearing

Xena again is my fast in the
solid bearing

Plumage Auction commenced
growing of governmentally for growing
to give require the loss of funds

Plating 100 taken from bath
Yield 200 ml to be taken out
in the morning

Spent 200 m. to the bottom and
in the morning

Hampson Review on 53 Machine
just dynamo second mt 93
the necessary work.

find dynamic version not 9.
the necessary work.

Wednesday, March 9, 81

Blowing, heavy & several men worked all
last night, ending leaving & commencing
bathic water.

Former Andrews making a series
of ang to someone. 4 paper hope for
carbonizing

Chlorobacterium chloratum spots bright
 Mix intimately powdered and Nitric acid
 to liquid best on bath of water effervesces
 from carbonates to brown liquid and
 effervesces to dryness brown mass
 and hot water all dissolving filtration
 & liquid put in bottle two plates of
 platinum suspended result a
 dark brown deposit on negative plate
 positive off by Nitric acid on heat

My itinerary bordered, as I think did

Sp. ligni, best on bark, violent effusion

Pinus, rubras to brown liquid, and

abstract to anyone. from mass

and fish were all divided between

4 liquids, put in better two flasks

~~Pl. 4~~ dependent on negative pole

Resistant by Nitric acid on Heat

Mich. 9

Illumination Lamp burned to night
on 7 machines

Armature two wind up to day one
by cross on by being connected
with soft solder

Visitors. Mr. E. came out to night
for first time. Feb. 25.

Thursday Mich 10

Porter Eng. Several workers all
light on bearing at 3. am
Kendall also on lamp on machine
except on bearing room last night
with Rabbit

Records. Orders by Mr. E. to go to
M. H. office with the light. Orders to
Camels. Records must be made
from this date.

Hammer Eng. even then afternoon for
factory and would very satisfactory

Visitors. Mr. E. here again in evening
also. Dr. Moore, House & Co. Crosby

Mar. 11 - Came in to New York.

Mar. 18. Arrived at Mount Pleasant.

18 - Machine Rtd at 65 - 5 Ave.

19 - Machine set up on engine room
supply at 120 on one machine made motor.

Bag & Miter 187, 153

Exp Lamps 195, 185, 163, 194
Miter 286

10 lbs tin

10 " lead

5 " Antimony

John W. Stetson

37 Orchard St. N.Y.

Per Canoe & Hester, 6 lbs

from Bowery

4133 ft. lbs.

8 per horse power

5 m. per at recent boat 6 cts

21 roller

75. per 282

Wallace & Man = Sam

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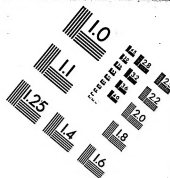
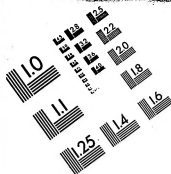
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